Home Computing WEEKLY

NEW

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Mrs W: 'I WON'T SEE SEX GAMES'

Anti-porn campaigner Mary Whitehouse has turned down an invitation to view "adult" computer games featuring explicit bedroom scenes.

The man who issued the invitation, John Pickard, said Mrs Whitehouse should see the games before condemning them.

But Mrs Whitehouse, president of the National Viewers and Listeners Association, told Home Computing Weekly: "He must be joking."

She explained that some critics had asked how she could judge without seeing the products, but she said that if she did people would say: "She's seen it and it hasn't corrupted her."

Her association had experts — including doctors and scientists — who submitted reports to the association.

In any case, she said, the association was not intended to be judge and jury.

She said: "As far as I'm concerned the only reason he has invited me is for the publicity. I'm just not interested.

"It's not for us to go and watch the stuff and give our personal views. What I though would be immaterial. What is important is whether the police believe it is actionable. And I don't doubt that the Customs and Excise will be well aware of these imports."

Mr Pickard's company, Silverfox Communications, of Clacton High Street, has already had a call from the police following a complaint by Mrs Whitehouse and Essex police say iovestigations are continuing.

The games cartridges are being imported from America and run on video machines like the

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Programs to type in for: BBC, VIC-20, Oric-1, Spectrum

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Sinclair in talks with new challenger

Hours after promoting his new home computer to journalists, a Japanese computer boss was in talks with his rival, Clive Sinclair.

They met over afternoon tea in a suite at London's Portman Hotel, rented by the president of the Sord Computer Corporation, Takayoshi Shiina.

And one of the subjects they talked about during their 90-minute meeting was possible co-operation over computer products.

Sord's Andrew Driver said: "Obviously Shiina-San was thinking of co-operation, but nothing concrete was decided."

Mr Shiina, now back in Japan, was in London to promote the Sord M5; a Tokyo-made micro now on sale here.

Continued on page 5

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Atari 2600 and on Atari 400 and 800 computers fitted with adaptor sockets. And Mr Pickard says he plans to sell them on cassette for other home computers within six months.

Each cartridge costs £39.95 for two games and the first consignment is due here by the end of the month. They have names like Cathouse Blues, Philly Flasher, Burning Desire and Knight on the Town.

All feature naked men and women and in most cases the aim of the games is for couples to meet in explicit sex scenes.

Mrs Whitehouse - refused invitation Picture: Northern Echo

Mr Pickard said the cartridges would have padlocks on the boxes so children could not get to them.

Mrs Whitehouse compared this to the idea of an X-certificate cable TV channel which, if the plan had gone ahead, would have an electronic lock.

She said: "It's just plain daft. If you have these things in the house there's no way you can stop children seeing them.

"The cinema is outside the home and children are not allowed to see some films. But anything that comes into the home has to be seen as to its effect on the child. No society should put the interests of the adult before those of its children."

Her view is shared by the director of the National Society for the Prevention of Cruelty to Children, Dr Alan Cilmour.

Continued on column 4

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SOFTWARE SUPERMARKET

Continued from column 1

He said: "The view of sex portrayed by such ghastly offereing can twist a child's mind for life."

Lawyers for Atari are looking into the possibility of taking action against Silverfox — but they can only act if its trademark is being infringed.

Atari's UK boss Graham Clark said: "We obviously deplore the stuff. The fact that they say it's Atari compatible does not do us any good."

And Mike Wilding, software market analyst for the company, said: "We are waiting until they come on to the market.

"I'm waiting for word from our solicitors on how we stand legally. Unless our trademark is being infringed there's no action we can take.

"On the subject matter it would be unfair to comment until we have seen them. If they are breaking the law in other respects it's up to the police."

BASIC, look you

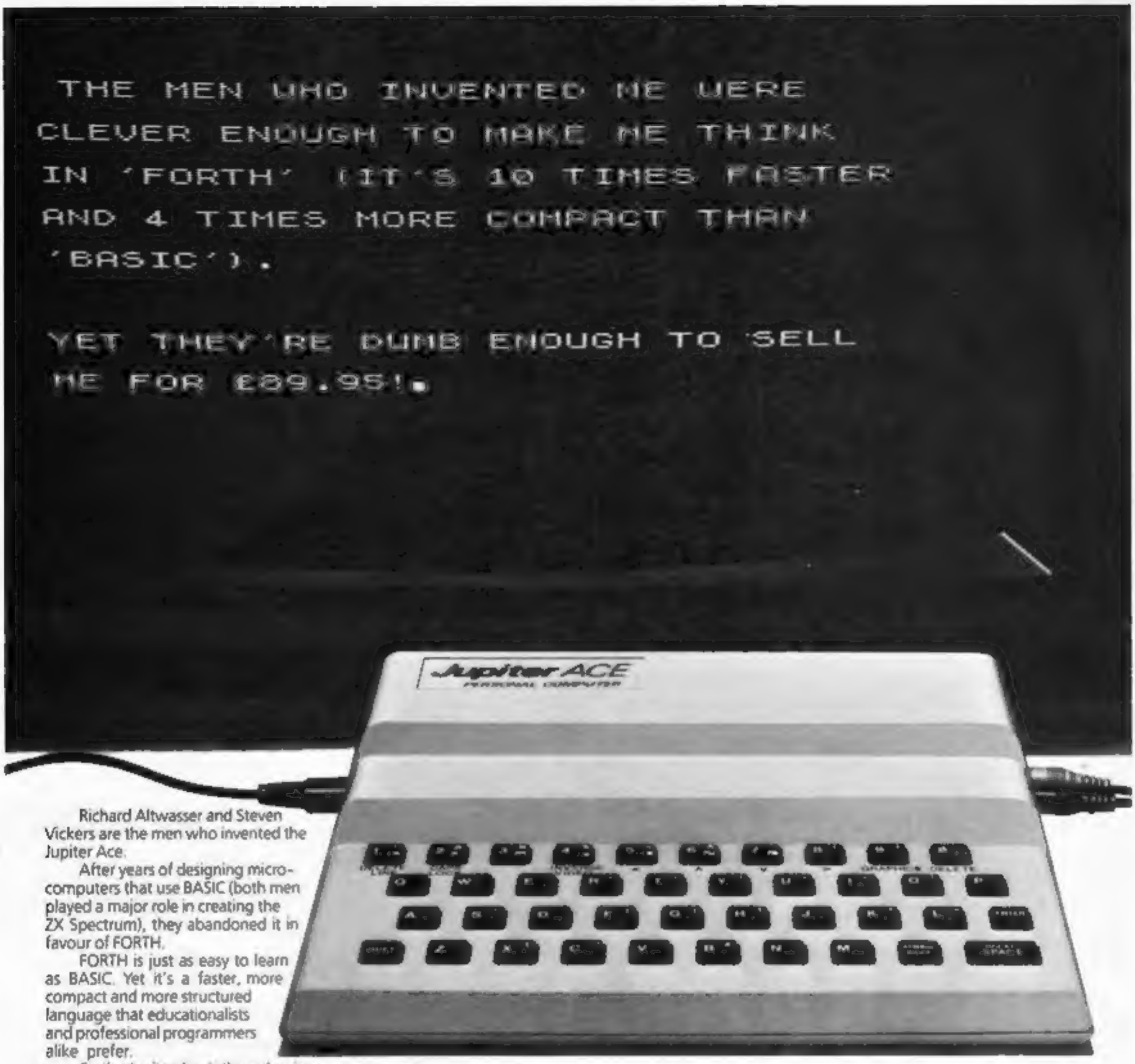
Try programming in Welsh BASIC — and, no, it's not a joke says the man who has just brought out BASIC CYMRAEG.

David Loverseed, proprietor of David Computer Software, said: "It's quite serious, but it's hardly a commercial proposition. We did it for fun, really."

The program, which costs £6, is loaded after standard BASIC into the Sharp MZ-80A and MZ-80K computers. It automatically translates the tokenised BASIC words into their Welsh eqquivalent.

Programs are interchangeable and can be listed in either Welsh or English, depending on the BASIC loaded, irrespective of the version used to write the program.

David Computer Software, 38 South Parade, Bramhall, Stockport SK7 3BJ



Richard Altwasser and Steven Vickers are the men who invented the Jupiter Ace.

After years of designing micro-computers that use BASIC (both men played a major role in creating the ZX Spectrum), they abandoned it in favour of FORTH.

FORTH is just as easy to learn as BASIC. Yet it's a faster, more compact and more structured language that educationalists and professional programmers alike prefer.

So the Jupiter Ace is the only micro-computer you can buy that is designed around FORTH.

Using it, there's little fear of accidentally 'crashing' programs halfway through and having to start all over again (a common fault with BASIC). The Jupiter Ace's comprehensive error checking sees to that.

The Jupiter Ace has a full-size keyboard, high resolution graphics, sound, floating point arithmetic, a fast, reliable cassette interface, 3K of RAM and a full 12 month warranty.

You get all that for £89.95. Plus a mains adaptor, all the leads needed to connect most cassette recorders and T.V.'s, a software catalogue (35 cassettes available, soon to be 50), the Jupiter Ace manual and a free demonstration cassette of 5 programs

The Jupiter Ace manual is a complete introduction to personal computing and a simple-to-follow course in FORTH, from first principles to confident programming.

Plug-on 16K and 48K memory expansions are also available, at very competitive prices. (There'll be a plug-on printer interface available soon, too.)

It'll take you no time at all to realise how clever Richard and Steven were to design the Jupiter Ace around FORTH. And even less time to realise what a silly price £89.95 is to charge for it.

Technical Information

Hardware
Z80A; 8K ROM; 3K RAM.

Keyboard
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Screen
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Software firms are asking for it

How one's heart bleeds for the software games manufacturer.

Not only is he beset on all sides by increasing competition, but his amazing profits are in danger of erosion by the pernicious practice of home copying.

The outrage of the software manufacturer who fears that libraries and "buy and try" shops encourage people to make their own copies, reminds me of the prostitute who cried "rape!" when her client availed himself of her services without paying: we may not condone the action, buy she was certainly asking for it.

Computer games cost anywhere from around £4.95 to more than £30. Now even at the lower end that is a lot to pay for a game that may hold the buyer's interest for only a week or two, perhaps only a couple of days.

At their best, and most expensive, there are a few cleverly conceived, imaginative and complex games available — Star Raiders and Eastern Front for the Atari are almost worth their high price. Most of them, however, develop a single idea over and over again, and for variation, the same thing again, only faster.

In the middle range — mostly home-grown — one could be lucky and find, say, a good chess program, or be faced with a boringly difficult game like Titan's Caverns. And at the bottom end are innumerable, unmentionable games — the most exciting part of these is the advertising blurb used to sell them in the first place.

It is salutary to consider that a full-price LP retails at only £5.95 or thereabouts, and the recording industry has vast overheads to cover before the manufacturing and distributing processes even begin. By contrast, the software overheads are minimal; even the programmers usually work at home.

This is a gold rush situation, and fortunes are being made overnight.

Does anybody doubt that computer games are wildly overpriced? That the profits currently being made in this area are thoroughly indecent? But rest assured, every excess in the end breeds its own corrective.

The software manufacturers are probably thinking of incorporating a jamming or self-destruct device in their tapes to outwit the copier. But your computer freak relishes just such a challenge, and the solution will rapidly, like milk-bottle tops to sparrows, become public knowledge.

No, the most effective way of discouraging home copying is simply to make it uneconomical.

If the average program was to retail at, say, £1.50, who would bother copying it? The recorded cassette probably costs the manufacturer, in quantity, no more than about 25p per unit. The same program could be adapted for 10 or 15 different computers. Rewards could still be huge for a worthwhile game.

The software people might not become instant millionaires, schoolboy programmers might not earn more than their fathers, but they could all make an honest living out of it.

Geoffrey Williams
Bookseller
Southsea, Hants.

● This space is for you to sound off about the micro scene, to present bouquets or to hurl brickbats. Share your views by sending them to Paul Liptrot, Opinion, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE. Please include your occupation and your interest in computing.

Lighter to carry

Commodore's new DX-64 portable computer, based on the big-selling Commodore 64, will go on sale here in the autumn priced at £650-£995.

Weighing about 22 lbs, it is considerably lighter than most other portables.

The lowest priced version has a 5in black and white monitor and a half-height 5¼in floppy disc drive with a full keyboard, plus four function keys, built into the detachable lid.

The keyboard is slightly different from the 64 because of the narrower width of the new computer.

The top of the range model has twin disc drives and a colour monitor with the same keyboard.

The new disc drives will also be available in separate units — the model 8050 with 1 megabyte of storage and the 8250 with 2 megabytes.

And there's more news about Commodore:

● An introduction to BASIC, part 1 for the Commodore 64 has been launched at £14.95. It has three parts: a self-study text of 15 lessons, two cassettes of programe and a flow chart stencil. The VIC-20 version, parts 1 and 2, are Commodore's top-selling programs.

● A re-styled version of the Commodore C2N cassette unit, compatible with all the company's computers, has been brought out at an unchanged recommended retail price of £45.95. There is no mechanical difference, but the new unit is sturdier.

● Commodore UK has a new general manager, Howard Stanworth. His predecessor, Bob Gledow, has been promoted to vice-president of Commodore Electronics in Hong Kong.

Commodore Business Machines (UK), 675 Ajax Avenue, Slough, Berks

Stylish and sturdier — Commodore's new C2N cassette unit

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Showtime for thousands

Ex-soccer star Denis Law was among the 9,000 visitors who flocked to the Manchester Home Computer Show.

Law, who played for Manchester United and Scotland, owns a Commodore 64 and was keen to win two computers, one for the winner and one for a school chosen by the winner.

More than 2,000 people took part and the winner was Stuard Baldwin, of 6 Bottesford Avenue, Withington, Manchester M20 8LQ. The school he named was Our Lady's High School, Alworth Road, High Blackley, Manchester M9 3RP.

The competition — and the show's popular computer advice centre — was run by the organisers, ASP Exhibitions, part of Argus Specialist Publications, which publishes Home Computing Weekly.

These are the correct answers:

A Sinclair Research order code number for the ZX Spectrum with 16K RAM: 100
B Quoted number of bytes of RAM (in decimal) in the standard Atari 400: 16384
C the first Sinclair ZX computer was the ZX**: 80
D Number of columns displayed by the Dragon 32 in text mode: 32
E Number of rows displayed by the Colour Genie in text mode: 24
F How many colours may be displayed by the Oric-1: 8
G Number of independently moveable sprites found on the Commodore 64: 8
H How many standard characters may be displayed on a standard VIC-20 screen display: 506

Entrants were than asked to add up the numbers in the answers and give the total: 17,142.

The next Home Computer Show will be held on June 4 and 5 in the Metropole Hotel, at the National Exhibition Centre, Birmingham.

ASP Exhibitions, 145 Charing Cross Road, London WC2H 0EE. 01-437 1002

Books for programmers

Publishers McGraw-Hill have announced a new series of computer books, starting next month with ZX81/TS1000 Programming for Young Programmers, by Linda Hurley, at £4.95 plus £5.95 for an optional tape with three games and enhanced versions of the programs in the book.

Other books in the series will include the Spectrum and Dragon and, says the company, are designed to take micro owners beyond simple programming.

McGraw-Hill Book Company (UK), Shoppenhangers Road, Maidenhead, Berks SL6 2QL

Maths by micro

LCL's Micro Maths, a two-cassette pack designed for O-level revision, is now available for the BBC Micro, VIC-20 and Spectrum at £24.50 as well as the ZX81 version for £19.50.

The company has also brought out a collection of 50 programs — on two discs — which is claimed to contain everything needed to get through maths O-level.

It costs £90 for the Apple and PET and is being converted for the BBC Micro.

LCL, 26 Avondale Avenue, Staines, Middx

Royal fever hits Silicon Valley

You are all probably quite aware that America recently got a chance to get crazy over the recent visit of the Queen. What you may not know is that Her Majesty got a VIP tour of Hewlett-Packard on her recent visit. There is even a rumor that she had a hard time prying herself away from the terminals.

Anyway, the Queen was given a very personalized tour of H-P by none other than David Packard, one of the firm's two co-founders. Among other things, she was shown how a computer is assembled, from chips to boards, and introduced personally to four different computers used for various specialty applications. In fact, a special window was created just so the Queen could look into the room wherein integrated circuit wafers were being tested.

Apparently, the staff at H-P got their fun to be goofy, setting up several more computers to display graphics demonstrations of the British flag, the Royal flag, and of course the US flag and California's flag. If that were not enough, there was even an animated dragon on display flying over a castle, to provide that certain British medieval flavour, I am told.

To culminate the visit, the Queen was give an HP-250 Model 25 minicomputer, worth about $24,000. The gift was provided by Ronny himself upon behalf of the entire country.

So what, you might ask, can Her Royal Highness do with such a computer? The computer apparently was presented with sufficient applications software to enable her to inventory the horses in her stable, keep track of their geneology, their race results, and their diet.

I cannot keep the image from my mind: it is one in thbe morning, and the Queen is saying to Prince Philip, "I'll be right to bed as soon as I get rid just one more bug in this program."

The question that I had, was will we now be subjected to a series of "Royal" commercials, depicting the Queen seated at the terminal of an H-P computer? The answer, thank goodness, is no. A White House spokesman spoke directly to the issue by stating that such an action would be completely inappropriate since the visit to H-P was set up by the White House, and not meant to result in a marketing device for H-P. Whew, what a relief!

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★ ★ ★ ★ ★

It had to happen. On the 16th of April, our Public Broadcasting System (i.e. no commercials) imported and began to show the first of the 10-part BBC series on Microcomputers. One US rep of Acorn Computers made the comment that the series did not show children. Well, why should it? They already know too much about computers anyhow.

See you next week.

Bud Izen
Fairfield, California

£1,000 competition from audiogenic and Home Computing WEEKLY

Here's your chance to win a share of £1,000-worth of software in another free, easy-to-enter competition from Home Computing Weekly.

We have got together with Audiogenic, who market a big-selling range of software for the VIC-20, Spectrum, Commodore 64, Dragon and Atari.

All you have to do is study the word square and mark as many program titles as you can find from the list given.

There are five great prizes of software from Audiogenic's catalogue to be won, so don't forget to name your computer on the coupon.

Included in the prizes is Wordcraft 20, a word processor for the VIC-20 which costs £150. It comes in a plug-in cartridge which also adds 8K of RAM, available for other programs too.

You could win one of the following:

1st prize Wordcraft 20 word processor cartridge for the VIC-20, worth £150, plus £150-worth of software from the Audiogenic catalogue
2nd prize Wordcraft 20 and £50-worth of software
3rd prize Wordcraft 20
4th prize £50-worth of software
5th prize £25-worth of software

And you gain even if you're not among the winners. Every entrant will receive a 10 per cent discount voucher — valid for three months — for any single software order from Audiogenic.

How to enter

Look at the list of software titles, all from Audiogenic, and mark clearly all those you can find in the matrix of letters. They may be given forwards, backwards, up, down and diagonally. Not all of the words in the list are in the word square.

Fill in the coupon, including the name of your computer, and send us both the matrix and the coupon. Copies will not be accepted. You must write in large figures on the back of your envelope the number of titles you have found.

Entries which do not meet these conditions will not be considered.

Post your entry to Audiogenic Competition, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE.

You have got until first post on Friday May 2 to get your entry to us and the solution and the names of the winners will be published in Home Computing Weekly.

This list of software titles contains all those hidden in the word square, and more:

Home Office	Castlemath
Bonzo	Spiders of Mars
Tomb of Drewan	Cloudburst
Trashman	Renaissance
Pit	Meteor Run
Astro Blitz	Mikro Assembler
Buti	Forth
Boss	Wordcraft
Kosmic Kamikaze	Choplifter
Tank Atak	Vicat
Outworld	Alien Blitz
Blockade	The Alien
Skymath	Golf

The small print

The first five correct entries drawn at noon on Friday May 20 will win the prizes, in the order shown above.

Coupons which are not fully completed and envelopes without the number of titles found given on the back will not be considered.

Entries will not be accepted from employees of Argus Specialist Publications, Audiogenic and Alabaster Passmore & Sons. This restriction also applies to employees' families and agents of the companies.

The winners' names and the solution will appear in Home Computing Weekly. The editor's decision is final and no correspondence will be entered into.

Entry Coupon

Name .....

Address .....

.....

..... post code .....

Your computers: .....

Post to Audiogenic Competition, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE.
Closing date: first post Friday May 20.

R	E	N	A	I	S	S	A	N	C	E	M	A	N	G	O	L	D	E	R
T	H	R	E	E	O	F	A	K	I	N	D	A	F	F	E	R	T	R	E
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C	R	O	S	S	A	N	F	G	E	R	A	K	I	L	T	R	S	E	D

Electron revealed

This is what Acorn's £150 Electron computer will look like.

Our exclusive drawing, checked with sources inside the company, shows a full typewriter-style keyboard in a casing measuring 13in wide, 2in high and, at 6¼in, less deep than its sister, the BBC micro.

Single key entry for BBC BASIC commands — like CHAIN, MODE, RENUM, COLOUR and LIST — is provided by 29 keys with the caps lock key also acting as a function key. This also controls 10 keys on the top row which act as programmable function keys.

The casing is the same colour as the BBC computer, with cream lettering and green acorn on the brown strip above the keys.

Acorn's aim has been to provide a "cut down" version of its BBC computer with a range of add-ons for features like additional interfaces, the Tube for second processors and Prestel.

Memory, at 32K of RAM an of ROM, is the same as the BBC model B and it has the same 6502 processor.

Its processing speed will be slower, there is just one sound channel and there is no Mode 7 screen display.

Unlike the BBC models, the Electron will be supplied with a separate power transformer. Outputs will be provided for colour TV, composite video and PAL or RGB monitors and cassette input is at 1,200 baud.

Now the race is on to ensure that the range of peripherals is available at the time of the launch of the Singapore-built machine.

Full-scale production is expected to start in July and there is a good chance that the Electron will be officially launched at the Acorn User Exhibition, starting on August 25.

Acorn Computers, Fulbourn Road, Cherry Hinton, Cambs CB1 4JN

Cycling into software

Cycling pals Tom Myles and Gary Metcalf thought a lot of computer software was "rubbish" — so they decided to set up their own company.

And now, four weeks after the formation of Soft Joe's, they have four games on sale, all costing £6.50, for the Dragon and BBC micros.

They first met when Gary moved into the same street and found they chared a sport — cycle racing.

Both were computer hobbyists; Gary had a Commodore 64 and Tom's micro was an Atari 400.

Tom, 24, said: "We had seen a lot of rubbish on the market and we knew we could do better."

Tom, whose job was dealing with injury claims with an insurance company, and Gary, 28 a former installer with a heating and ventilation firm, raised the money to start Soft Joe's thanks to their branch of Lloyds Bank.

And they say they have big plans to promote their software, including a road show.

Soft Joe's has just one employee at present — Tom's sister-in-law Julie Naybour, 17, who had been out of a job for six months until Tom and Gary took her on as a typist.

Soft Joe's, Small Business Centre, Claughton Road, Birkenhead, Merseyside

HOW DARE THEY!

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Top Twenty programs for the Spectrum

1	The Hobbit	Melbourne House (–)
2	Flight Simulation	Psion (3)
3	Penetrator	Melbourne House (1)
4	VU-3D	Psion (12)
5	Horace Goes Skiing	Psion/M. House (9)
6	VU-File	Psion (–)
7	Planet of Death	Artic (13)
8	Hungry Horace	Psion/M. House (4)
9	Nightflight	Hewson (–)
10	Arcadia	Imagine (10)
11	Transylvanian Tower	Richard Shepherd (2)
12	Chess	Psion (15)
13	Schizoids	Imagine (–)
14	Planetoids	Psion (5)
15	3D Tanx	dK'Tronics (17)
16	Ground Attack	Silversoft (14)
17	VU-Calc	Psion (16)
18	Galaxians	Artic (6)
19	Football Manager	Addictive Games (–)
20	Escape	New Generation (–)

Compiled by W. H. Smith. Figures in brackets are last week's positions

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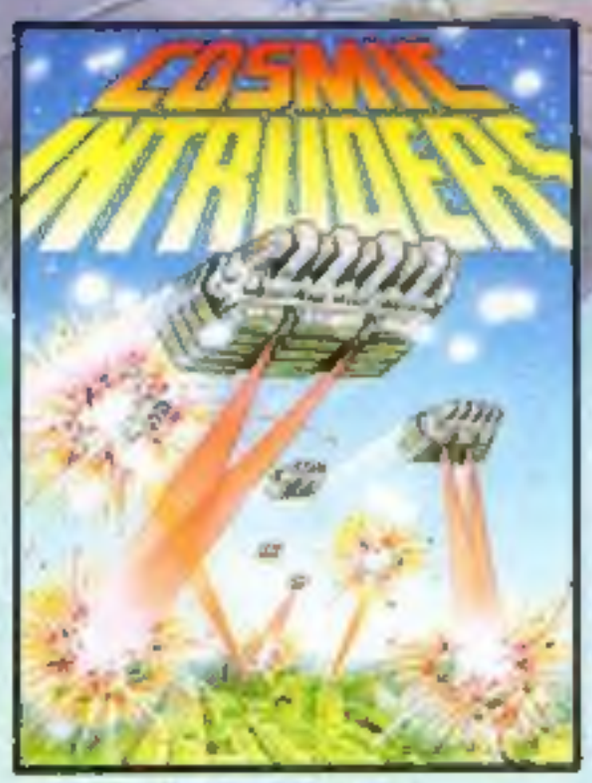

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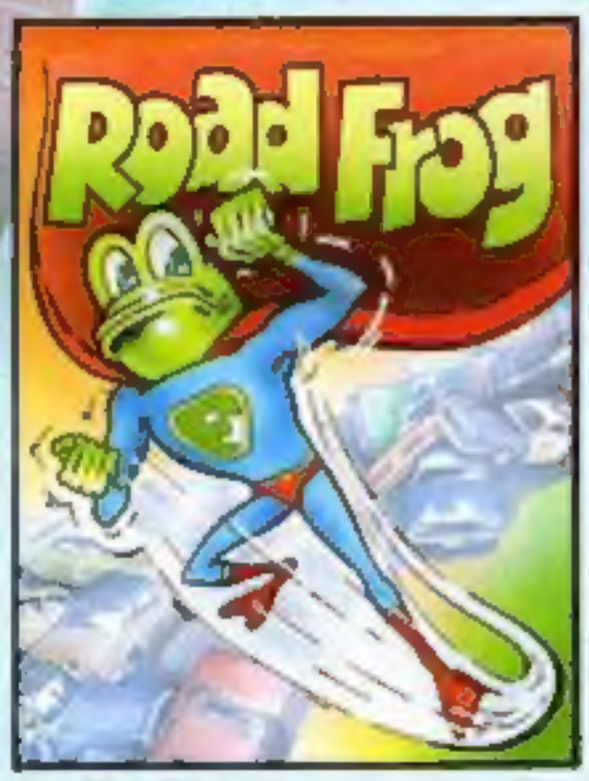

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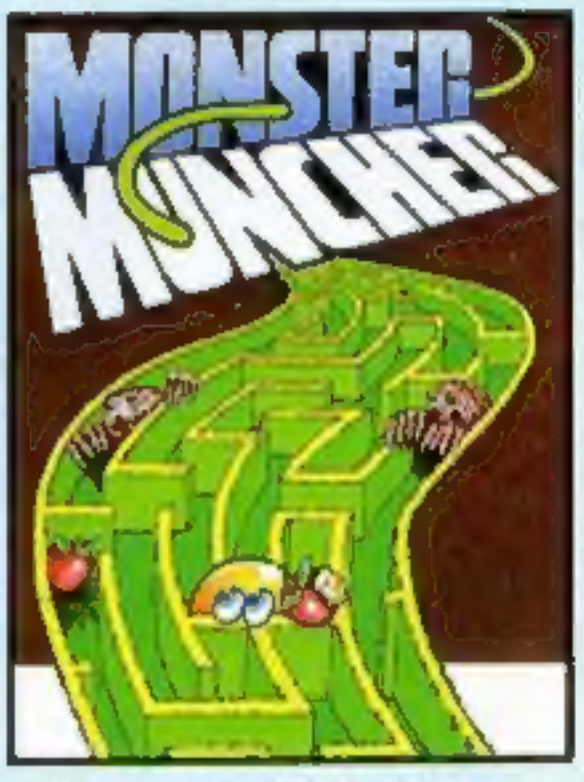

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Continued from front page

It has the same Z80A processor as the Spectrum along with rubber-like keys. It measures a compact 10¼in by 7¼in by 1½in and has 8K of ROM and 16K of video RAM.

But there is just 8K of RAM available to the user — until plug-in memory, in 16K and 32K modules, are despatched from Japan in July. The faster M5 Turbo, with 64K of RAM, is due here in September.

The Spectrum offers 16K of RAM for £99.95 and the 48K model is £129.95.

However, Mr Shiina said the M5 was easier to use, particularly because it offered FALC, a version of Sord's PIPS language which was simpler to use than BASIC.

Clive Sinclair — in talks

He said: "I think the Spectrum is very nice, but I don't think it has much expandability. And BASIC is too difficult to learn and too difficult to use. The market is wide enough for all of us.

"I would like to meet Mr Sinclair to see if we can find some co-operation."

Mr Shiina said the M5 would also succeed because of its easy to use graphics and because the range of software was so good.

It comes with what Sord call BASIC 1 built-in and BASIC G and BASIC F will be available on cartridge, both at £29.70 each. FALC will also be on cartridge for the same price.

There are three cartridge games, at £20.35 each, and a range of cassettes, costing £7.60, available from Sord, with more to follow. Joysticks cost £21.21 a pair.

Mr Shiina also revealed that Sord was bringing another small computer to the UK in August, the hand-held M9 with micro-cassette recorder and liquid

Takayoshi Shiina — founder and president of Sord

crystal display of eight lines of 40 characters.

Sord's UK sales manager Doug Sidle said Computer Games had placed an advance order for 30,000 M5s and added: "I'm looking to sell 100,000 this year, starting next month."

Asked about the competition and about the 4K of RAM, he said: "We seem to be sliding into a unique niche. The market research seems to show we will reach 20 per cent in the first year.

"You could be right — it could be too expensive. But my research shows we are in a different league. You can argue this about any computer equipment."

Sord, which also markets a range of office computers, has invested £35,000 in the Bugsy Malone stage show in London and the director, ex-Monkee Mickey Dolenz was the reception. He uses a Sord computer in his work.

Mr Shiina, 39, who founded Sord 12 years ago, saw Mr Sinclair later in the day with his Michihiro Yamada, general manager of Sord's Dublin plant.

Mr Sinclair was there with an aide, Anita Sinclair (no relation). Mr Driver explained that both men were interested in using computers in transport — Mr Sinclair with his electric car project and Mr Shiina with computer-controlled submarines and helicopters.

Sord, Samuel House, St Albans Street, London SW1Y 4SQ

Sord's M5 home computer — now here from Japan

Spectrum, ZX81 prices slashed

Prices for the Spectrum and ZX81 have been slashed by W.H. Smith — just a week before maker Sinclair Research brings in its own Spectrum price cuts, plus new software.

But a Sinclair spokesman stressed that W.H. Smith, by far its biggest UK customer, did not get special treatment.

Now the 16K Spectrum costs just £99.95, a saving of £25.05, and the 48K model is reduced by £45.05 to £129.95. Sinclair's reductions, starting today, are similar.

And the ZX81 from W.H. Smith is now £39.95, down £10.

Stewart Binnie, merchandise controller for computer products, said his company cut prices early in time for the Bank Holiday.

And he announced that the 245 computer departments would be increased in size this year and — as revealed in Home Computing Weekly — computer "shops within shops" would open in the next few months.

A Sinclair spokesman said economies of volume production had enabled the company to reduce prices. It had no plans to cut the cost of the ZX81, last given a new price in August last year and still selling at 30,000 a month.

To coincide with its new prices, Sinclair unveiled a new range of software for the Spectrum and ZX81 which will be on sale in May, bearing the Sinclair name.

Artic, the Liverpool-based software house, has written versions of the FORTH language for the Spectrum and the ZX81, with 16K of RAM, priced at £14.95.

There will be a Small Business Accounts program for the 48K Spectrum, written by Wilsden and costing £12.95. And for the same model Psion and board game company Spears have got together to bring out Scrabble, costing £15.95.

Horace, a character who has featured twice in computer games, has a new adventure in Horace and and Spiders, costing £5.95, by Psion and Melbourne House and running on both Spectrums.

And there are two more cassettes for both Spectrums: Backgammon, by Psion at £5.95, and Cyrus-Is-Chess, priced at £9.95 from Intelligent Software.

And for the 16K ZX81 Macroniocs if providing two £4.95 games, Sabotage and City Patrol.

● Commodore announced later that it was spending £¼m on a press advertising campaign in May and June, promoting its VIC-20, which has now sold 1.2m world-wide.

Improve your games

AGF is bringing out an improved version of its Spectrum and ZX81 joystick interface module at the end of the month.

It retains simulation of the cursor keys, said AGF boss Adrian Fosberry, and now the keyboard remains functional.

Joystick Interface Module II, costing £20.95 by post, includes a program to draw in high resolution.

AGF Hardware, 26 Van Gogh Place, Bognor Regis, West Sussex PO22 9BY

SPECTRUM/ORIC SOUND BOOSTER

Telesound 84 outputs the computer sound direct through your unmodified TV set. Sound effects then can be controlled from a whisper to a roar. Three easy snap-on connections eliminate soldering.

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Bombs away . . . it's the only way to land safely

Chopper is Shingo Sugiura's first program for the Oric-1. It's easy to play, easy to understand and should be easy to extend

You are the pilot of a decrepit helicopter rapidly losing altitude above a built up city

If you crash you will inevitably die but by using the bombs on board and releasing them at the right time could create space for your helicopter to land

How it works

10-170 set up screen
180-200 win message, option to replay
210-440 instructions, enter
450-590 data + for + bomb, buildings and helicopter
610-690 bombing routine; explosion, option to replay

The program uses user defined characters to good effect although using all the colours was beyond me

Playing the game is very simple. You just press the space bar when you want to release the bomb but difficulty lies in the fact that you are allowed only one bomb on the screen at a time, so you have to choose carefully when to release the bomb.

At beginning you choose the speed, destructive level and the general difficulty.

The program consists of one main loop and several procedures which are called by GOSUBS.

The effect of moving the chopper is achieved by defining a string which is half a space and the other half the chopper so that when it moves one character position forward it automatically rubs out the last character.

I have redefined the ! to be the bomb, @ to be the chopper and & to be a building block.

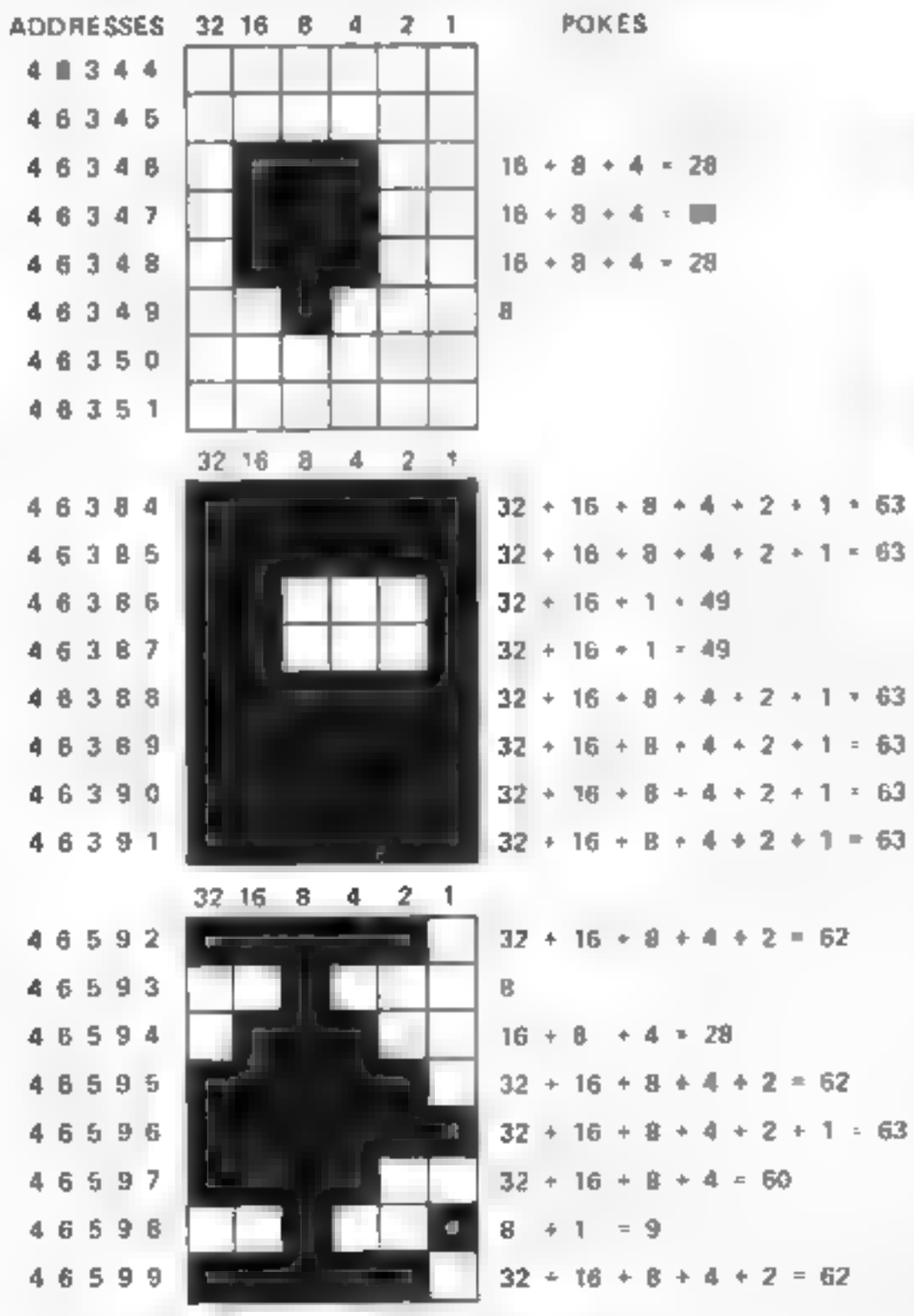
The drawings show the addresses, the shapes of the new characters and how I worked out the values to be POKEd into the addresses

Variables

PX X co-ordinate of chopper
PY Y co-ordinate of chopper
PLS chopper
BX X co-ordinate of bomb
BY Y co-ordinate of bomb
F flag to indicate whether a bomb is on the screen
W number of times bomb hits a building block
DE destructive leve.
DI difficulty
SP speed

Hints on conversion

The screen format of the Oric-1 is 40 by 26 and allows eight colours to be displayed.
PAPER 7 changes the background colour to white
INK 0 changes the foreground to black
PAPER 6 changes the background to cyan
INK 1 changes the foreground to red
PRINT CHR$(17) deletes the cursor (has the opposite effect if the cursor is already deleted)
PLOT X, Y, A$ prints A$ at co-ordinate X, Y
PRINT CHR$(4) double height
PRINT CHR$(140) flash.



How I designed (from top) the bomb, buildings and the helicopter

ORIC-1 PROGRAM

```
  1 REM          **********************
  2 REM          *      BOMBER        *
  3 REM          * By Shingo Sugiura *
  4 REM          *     APRIL  1983    *
  5 REM          **********************
  6 '
 10 CLS PAPER 7:INK 0
 20 GOSUB 210
 30 CLS PAPER 6 INK 1 PRINT CHR$(17)
 40 GOSUB 450
 50 REPEAT
 60 PLOT PX PY,PL$ PX=PX+1
 70 IF SCRN(PX+1,PY)  32 THEN GOSUB 640
 80 IF PX>=35 THEN PLOT PX,PY," " PX=1 PY=PY+1
 90 WAIT SP
100 IF KEY$=" " AND F=0 THEN GOSUB 610
110 IF F=0 THEN GOTO 160
120 PLOT BX,BY," " BY=BY+1
130 IF W=DE OR BY=25 THEN W=0 F=0 GOTO 160
140 IF SCRN(BX,BY)<>32 THEN W=W+1
150 PLOT BX,BY,"!
160 UNTIL PY>=24
170 PLOT PX,PY,PL$
180 PRINT PRINT"Well done. You've [illegible]
    PRINT CHR$ 17
190 PRINT PRINT PRINT CHR$(140),"P[illegible]PA E B
AR to replay.
200 REPEAT UNTIL KEY$=" " RUN
210 REM Instructions
220 PRINT PRINTCHR$(4) SPC( 15),"CHOPPER" PRINT
CHR$(4
230 PLOT 1,1,10 PLOT 1 2 10
240 PRINT PRINT SPC(10,  E[illegible]
250 PRINT PRINT"   You are in a desperate copp
er
260 PRINT"rapidly running out of fuel."
270 PRINT"Your only hope is to destroy the"
280 PRINT"buildings below by dropping the
290 PRINT"bombs on board If you manage"
300 PRINT"to flatten the b ild[illegible]
310 PRINT"to land your chi[illegible]
320 PRINT"      Use the SPACE BAR to drop bombs
    PRINT
330 PRINT" Enter speed (1 fast - 9 slow) ", RE
PEAT REPEAT AN$=KEY$
340 UNTIL AN$<>"" OK%=( AN$ ="1") AND ( AN$ ="9
")):UNTIL OK%
350 SP=VAL(AN$) PRINT AN$ PRINT
360 PRINT" Enter difficulty (1-9) ", REPEAT RE
PEAT:AN$=KEY$
370 UNTIL AN$<>"" OK%=((AN$>="1") AND (AN$<= 9
")) UNTIL OK%
380 DI=VAL(AN$) PRINT DI PRINT
390 PRINT" Enter destructive level (3-9) ", RE
PEAT REPEAT AN$=KEY$
400 UNTIL AN$<>"" OK%=((AN$>="3") AND (AN$<="9
")):UNTIL OK%
410 DE=VAL(AN$) PRINT DE
420 PRINT PRINT PRINT CHR$(140),"    Press SPA
CE BAR to start.";
430 REPEAT:UNTIL KEY$=" "
440 RETURN
450 REM Initialise
460 PX=1 PY=3 PL$=" @" F=0
470 PRINT PRINT SPC(12);"C H O P P E R" PLOT 0
,1,0
480 FOR BO=46344 TO 46351
[illegible] READ A POKE BO,A NEXT BO
500 DATA 0,0,28,28 28,8 0 0
510 FOR BU=46384 TO 46391
520 READ A:POKE BU,A NEXT BU
530 DATA 63,63,49,49 63,63,63 63
540 FOR CH=46592 TO 46599
550 READ A POKE CH,A NEXT CH
560 DATA 62,8,28,62,63,60 9,62
[illegible] FOR BUX=5 TO 32
580 FOR H=RND(1)*(14-DI)+DI+11 TO 25
590 PLOT BUX,H,"&" NEXT H NEXT BUX
600 RETURN
610 REM Initialise Bombing
[illegible] BX=PX BY=PY+1 F=1
630 RETURN
640 REM Crash into building
650 EXPLODE
660 FOR A=1 TO 20 PAPER RND(1)*7:WAIT 10 NEXT
A PAPER7
670 PLOT1,5,"  Press SPACE BAR to replay." PR1
NT CHR$(17)
680 REPEAT UNTIL KEY$=" "
[illegible] [illegible]
```

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by Addictive Games

for SPECTRUM 48K

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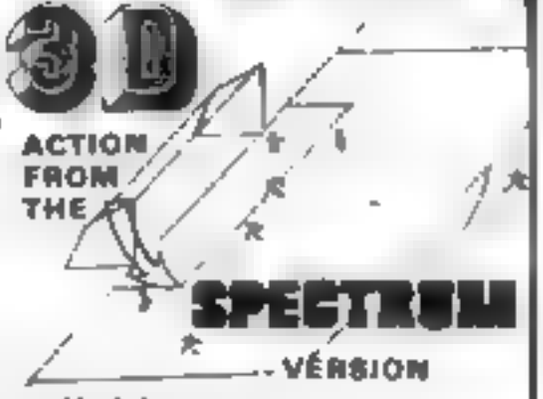

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WHAT THE PRESS SAY ABOUT IT

IF YOU have always wanted to manage a football team, FOOTBALL MANAGER, *from Addictive Games, is for you — The game is ideal for a football fanatic but the most interesting thing for us was the 3-D graphics used to create the goalmouth action the game is a winner*

SINCLAIR USER FEBRUARY 1983

Although I'm no great football fan, I really enjoyed playing this game excellent use is made of colour and user-defined graphics The game is very logically put together, so that the development of strategy and tactics has a real effect. For example, one of my teams got through to the fourth round of the F A Cup where it was beaten by a second division side This upset morale and meant that our promotion bid failed. Perhaps I should have given up the F A Cup run and held some good players back — the possibilities are endless. Brian Clough had better watch out!

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Send your letters to Letters, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE. There's £5-worth of software for the best each week, so don't forget to name your computer. Queries cannot be answered on this page

Got an Oric? Here's a tip

Thank you for a marvellous publication, and here's a tip for Oric users. If you're using READ and DATA in a program, then this may be of use to you.

The Oric-1 stores the pointer to the current data statements at locations 174 and 175, which are accessed by PEEK (174). I find this bit of information very useful indeed

Does any other Oric owner have my BASIC bug? If you print TAB (20), it comes out as SPC (10). It's very annoying, and I'm thinking of taking the machine back.

John Airey, Ryton, Tyne and Wear

Want to play games? Buy a micro

With regard to One Man's View in HCW No. 5, if Mr Raboiotti compared the prices of consoles & cartridges to a micro & cassette-based software he would find it more viable to buy the micro.

My own opinion is that a games only machine is just purchased for "rainy day" occasions and to pay £14-£40 for a game is mad. Some console cartridges rank with early ZX81 "arcade action" games in quality

I am a test engineer who worked for three years in the gaming industry and I have four micros; two home-brew, a ZX81 and a Spectrum. Out of the 30 programs I own, only six come from software houses, because like Mr Raboiotti I feel some of the software available is a complete rip-off

Finally one side of the industry Mr Raboiotti did not look at is software. The amount of pirating increases with each machine sold, through friends taping programs for friends & tape to tape

When techniques are developed to stop this practice will a rapid climb in cassette sales take place, or will the software indsutry die off in the same as the video & record industry?

P.A. Adams, Redcar, Cleveland

Computers in Corby

The Universal Micro Club has changed its venue. We are now meeting in the Lodge Park Sports Centre, Corby, Northants. Anyone who is interested in Pet, Vic, BBC, Dragon, Spectrum, Commodore 64 and other home microcomputers is most welcome.

Meetings start at 7.30. 1983 subscriptions are £4 for junior members and £6 for senior members (over 18)

For further details and dates of meetings, contact Peter Wilson on Great Oakley 742622, or write to the address below

Peter Wilson, 26 North Cape Walk, Corby, Northants NN18 9DQ

. . . and in Wales

Please could you publish details of our micro club?

We are Bangor and District Micro User Group (BADMUG) and meet in Bangor Community Centre, High Street, Bangor every fortnight on thursdays at 7.30pm. Further details from Dilwyn Jones at the address below.

Dilwyn Jones, Fodol Farm, Hafod Lane, Bangor, Gwynedd

Don't knock micro games

I was fascinated by the arithmetic used by the writer in 'One Man's View', April 5th-11th (Games are Killing the Micro Market), who seems to think that if you sell a third of all the micros sold over a decade in the last third of the decade, you have got an incredible upswing

It's more likely you have got an incredibly bad maths teacher, or a talent for politics!

Anything which stimulates interest in computing is good The basic use for micros in the home at present must be for entertainment and education, and I see no reason at all why people should have to learn how to program it in order to enjoy the advantages.

Entertainment, of course, does not necessarily mean just playing games. Unfortunately a lot of customer awareness of other possibilities needs to be stimulated before there will be a ready market for other types of software

We shall be developing products for other home applications, and they won't be trivial things like personal tax guides or home budgets! The aim will be entertainment, but not allied to games as such. (Though dont be surprised if an odd game or two escapes through the door.)

J.R. Keneally, Camel Micros, Wymouth

Counting the cost of software

A quick glance at any magazine's computer software top ten chart a few weeks would have shown Melbourne House's progam, The Hobbit, near or at the top. Whether you like this program or not one thing is certain; it is overpriced. This is a major problem in the Home Computer industry, and I am taking the opportunity to sound off about it.

I wil use the Hobbit as a scapegoat. For £14.95, what do I or the average buyer get? A program, of good quality admittedly, on a cassette...nothing special in that. It comes in a pretty box, with a comprehensive manual. As far as I can see, this is the only thing that puts the program up £9 higher than normal.

Perhaps the price of the book could be included, but in the advet it says the book is free. So where is this nine pounds going? Into the pockets of Melbourne House, where else? And they get the normal profit, as well

Take Automata's Pimania as another example. £10 for a Basic program, with no fancy presentatio nor free giveaways. It will of course pay for the Pimania competition prize, but after that...into the pockets of Automata.

I could name other examples. Black Crystal from Carnell. Trader from Quicksilva (£9 for this? £7.50 for Black Crystal? Why?). The list is almost endless. And why is it that software for different machines is priced differently? Sinclair software, for example, is cheap compared with the BBC or VIC.

I have studied the industry in depth. The prices for things like advertising may be quite price, but £10?

My point is this. Why is the user losing out while the company makes a quiet little profit? And, more importantly why can one company sell a game for £5 while others charge £10 or more? I would be interested in a reply from one of the software companies.

Peter Sweasey, Weybridge, Surrey

★ Software winner

Linden Loader, of Melbourne House, said: "You have to take into account the high costs of producing The Hobbit. This included development by four specialists who put the program together, each working on one aspect: an expert on the works of Tolkien, an expert games programmer, an artist to develop the graphics and a linguistics graduate to work on the natural language commands.

That amounts to quite a lot of expensive talent, and the whole thing involved 18 months work

Other costs include royalties to the Tolkien estate and the book of The Hobbit, which normally costs £1.50.

The costs of developing software are higher than many people appreciate, and you have to pay for a good program."

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Programs to cut a long job short

You can take the sting out of programming by taking a short cut. Here our reviewers assess some of the latest utility programs for you

Data Pack
VIC 20
£8.95

Sumlock, Royal London House, 198 Deansgate, Manchester M3 3NE

Hands up all those who helped justify their purchase of a VIC with the idea that they would use it for information storage and educational programs. OK, this one's for you.

In fact it's not one but three programs. They are all in Basic. What's more thay are nothing that the average programmer with say 100+ hours programming experience couldn't knock off over a weekend without raising a sweat

There's Data File, Data Sort and Data Test. Data File sets up or searches and updates a very simple data base in the form of a two column list. You could, for example, use column one for names and column two for phone numbers or birthdays.

Data Sort reads in data (in the same format) sorting it either alphabetically or numerically, ready to be rerecorded.

Data Test allows you to test data already entered, so that if your data was Kings and Queens of England with the years they reigned, it would pick sovereigns at random and ask you the dates.

The programs work on any size VIC, so only the memory size you have limits the amount of data. If you want more than one hundred items in your list, though, you would have to change the array dimensions.

The standard of programming could not be called elegant, structured or easy to follow, but it does at least seem to work. **B.J.**

instructions	0%
ease of use	75%
graphics	n/a
value for money	40%

Multisound Synthesizer
VIC-20
£9.99

Romik, 24 Church St, Slough, SL1 1PT

If you ever had any fears about the versatility of the sound capabilities of the VIC-20, this program will rapidly dispel them. The multisound synthesizer enables you to develop multipart melodies in a relatively simple way.

The four function keys are used to provide the main options. As each key is pressed, the instructions for that particular option are displayed on the screen

F1 provides a "keyboard" for the playing of a melody. All combinations of the three voices are possible with effects including vibrato, decay and tremolo

F3 gives you a rhythm box with six preset drumming patterns: I particularly liked the tango and waltz. A tempo control is provided.

F5 enables you to save up to four preprogrammed background sequences consisting of up to 255 notes. These can be saved on tape if required

F7 provides similar options to F1 but acts on the white noise generator.

Using these options you can set up the rhythm and background sequence and then play a melody over the top of them.

My main criticism was the lack of decent instructions. The package is easy to use once you have sorted out the commands, but getting to know how it works was not so easy.

What Multisound Synthesiser needs is a booklet of detailed step by step instructions with examples for the user to try

A second criticism is that the layout of the "keyboard" obtained from F1 was not logical. A piano type layout would be easier to use.'

But all in all, the multisound synthesiser is an incredibly versatile package which can be used to produce surprisingly complex musical sequences. Very good value, and will provide many hours of entertainment. **A.W.**

instructions	60%
playability	75%
graphics	n/a
value for money	80%

Speakeasy
48K
Spectrum
£4.95

Quicksilva, 13 Palmerston Road, Southampton SO1 1LL

With several of Quicksilva's programs now using synthesised speech, Speakeasy seems a natural addition to their software catalogue for those who wish to add speech to their own Basic or machine-code programs.

The program is menu-driven and the user is given six options enabling him to record, playback, save and edit speech or music. The speech or music is entered into the computer's memory by playing it through the Spectrum's ear socket with the program in record mode.

Recording takes a minute or two, although when played back, it lasts only about ten seconds since a large amount of memory is required to store the digitised sound.

Once loaded, the sound can be edited by changing the start and length pointers which control which part is played using the playback option. Once you are satisfied with the effect, you can then save the passage to tape.

The saved passage loaded at any time using the LOAD "" CODE instruction and then played back using a USR xxxxx call, where xxxxx is the start address of the sound. This address is also stored in the filename of the passage as 'SPxxxxx'

The quality of the sound is not excellent, but it is intelligible enough for most purposes. The program itself is easy to use, although the instructions given within the program are rather confusing and long-winded. But this does not affect the usability of a very clever and useful program. **I.O.**

instructions	65%
ease of use	75%
graphics	70%
value for money	80%

How to get a quart into a pint pot of memory

Memory is a limited resource particularly in the ZX81. Nick Godwin's programming tips will help make your RAM go further

Anyone who writes programs for the ZX81 soon comes up against a major obstacle: lack of memory. Even with a 16K RAM expansion you may find that available memory places strict limits on your programming.

But there's more than one way to write a program. Using my memory-saving tips, you can as much as double the amount of data that will fit into RAM

Firstly, avoid using numbers in program lines. A number in a program line takes the following form

display 126 5 bytes

The first part (display) takes up a number of bytes equal to the full length of the number including any minus sign or decimal point. The next byte always contains the value 126.

Finally, a further five bytes contain the number in coded from (as in variables). Thus there is, in effect, an overhead of six bytes on each number. Here are a few examples:

Number	Bytes used
0	7
1	7
10	8
-10	9
10.6	10
-10.6	11
.009	10
-.009	11

There are three ways to reduce this wastefulness

1. Where possible, use the CODE function to represent a number. Here are some examples.

Number	Bytes used	Code	Bytes used	Bytes saved
0	7	CODE ""	3	4
31	8	CODE "3"	4	4
237	9	CODE " GOSUB"	4	5

You can only use this method for certain numbers· 0-10, 12-66 and 128-255. The code for each number can be found in the table starting on page 181 of the ZX81 manual Note that in the case of certain keywords (eg GOSUB), it is necessary to first type THEN, followed by the keyword. THEN must then be deleted. Function keywords (eg TAN, code 201) can be entered by first pressing FUNCTION.

here are some examples of this technique in use:

```
LET X=CODE ""                    (LET X=0)
PRINT CODE "COPY"                (PRINT 255)
FOR J=CODE "A" TO CODE "Z"       (FOR J=38
STEP CODE "."                    TO 63 STEP 4)
```

2. When CODE cannot be used, VAL may be substituted. Here are some examples:

Number	Bytes	VAL Phrase	Bytes used	Saving
1	7	VAL "1"	4	3
-1	8	VAL "-1"	5	3
99	8	VAL "99"	5	3
1000	10	VAL "1E3"	6	4
0009	11	VAL "9E-4"	7	4
10000	11	VAL "1E4"	6	5

Here are some examples of use:

```
GOTO VAL "1E3"                   (GOTO 1000)
LET X=VAL "1E5"                  (LET
                                 X=100000)
FOR J=VAL "100" TO VAL "1E3" ST EP   (FOR J=100
VAL "5"                          TO 1000 STEP
                                 5)
```

VAL and CODE can be mixed in FOR... TO .. statements, eg

```
FOR J=CODE "=" TO VAL "100"      (FOR J=20
                                 TO 100)
```

Certain uses of VAL are not allowed. if used as part of a mathematical expression, the VAL part must come first. Often this limitation can be overcome by enclosing the whole of the expression in quotes and preceding it with VAL:

```
LET X  X+1                       (12 bytes)
LET X=VAL "1"+X                  (9 bytes)
LET X=VAL "X+1"                  (9 bytes)
```

The last method can be very useful for long and complicated expressions. Here are three alternative ways of writing the same expression, which increments or decrements X within certain limits, according to the value of Z (as likely to be used in games requiring "motion", or in "drawing board" type programs)·

```
LET X=X+(X 63)*(Z=36) — (X 0)*(Z=33)     (55 bytes)
LET X=X+(X CODE "Z")*(Z=CODE "8")        (39 bytes)
— (X)CODE "")*(Z=CODE "5")
LET X=VAL "X+(X 63)*(Z=36) ← (X 0)       (34 bytes and
*(Z=33)"                                 easier to write)
```

A further limitation on the use of VAL is that it must not be used for the second part of a co-ordinate pair, eg: PLOT VAL "10", VAL "10".

3. Where the same number is used over and over again in a program, for example to call a subroutine, it can be replaced with a variable assigned at the beginning of the program. This can also serve as a useful mnemonic, eg

```
LET INP = VAL "3E4"
GOSUB INP
```

In this example, INP may be a mnemonic for INPUT and refer to a subroutine which deals with input to the program, and the value represented is 3000. Thus the GOSUB instruction means: "GOSUB 3000".

A second method of saving memory is to avoid, where possible, using arrays of numbers, as these require 5 bytes for each value stored. Numbers can often be adequately stored in a string. One way is to use numbers in conjunction with VAL. Try this:

```
10    LET X$ = "105027163942501720163142506128243104096"
20    INPUT X
30    IF X CODE "  " THEN GOTO CODE " = "
40    PRINT VAL X$(VAL "4*X-3" TO VAL "4*X")
50    GOTO CODE " = "
```

RUN, and enter 1 — 10. The value displayed is the appropriate number stored; for example, enter 2 to print the number 2716.

The same principle can be used to store and recall numbers, provided these are limited in length, as the following routine illustrates.

```
10    LET X$ = ""
20    DIM Q$(VAL "6")
30    INPUT X
40    IF LEN STR$ X  LEN Q$ THEN GOTO CODE "2"
50    IF NOT X THEN GOTO VAL "100"
60    LET Q$ = STR$ X
70    LET X$ = X$ + Q$
80    GOTO CODE "2"
100   FOR J = VAL "1" TO LEN X$ STEP LEN Q$
110   PRINT X$(J TO VAL "J + LEN Q$ - 1")
120   NEXT J
```

RUN, and enter a number of values none of which exceeds six digits (including decimal point or minus sign) in length. Finally, enter zero to obtain a display of all the numbers entered

Access to any number is achieved by an instruction such as: LET X = VAL X$(n*6 - 5 TO n*6), where n is the reference to the number (eg: n = 3 to collect the third number).

The maximum length of the number is set by line 20. Try changing this, eg: to VAL "10"); experiment!

Values can also be stored in strings using CODE in place of VAL. This allows 256 values to be stored in each byte, because while many codes cannot be entered in the form of characters via the keyboard, a character assigned by its code in the program can be identified by the computer (although not directly by the human operator).

The following routine allows whole positive numbers up to a maximum value of 65535 to be stored and recalled. RUN and operate in the same way as the preceding program

```
10    LET X$ = ""
20    INPUT X
30    IF NOT X THEN GOTO VAL "100"
40    IF X  VAL "65535" THEN GOTO CODE " = "
50    LET X$ = X$ + CHR$ VAL "INT (X/256)" + CHR$ VAL
      "X - 256*INT (X/256)"
60    GOTO CODE " = "
100   FOR J = VAL "1" TO LEN X$ STEP VAL "2"
110   PRINT VAL "CODE X$(J)*256 + CODE X$(J + 1)"
120   NEXT J
```

The program stores each number in two bytes, the first of which is the most significant (ie larger) part. The same principle can be applied to larger values, which can be stored in three bytes (maximum value 256**3 - 1). For example:

```
10    LET X$ = ""
20    INPUT X
30    IF NOT X THEN GOTO VAL "100"
40    IF X = VAL "256**3" THEN GOTO CODE " = "
50    LET X$ = X$ + CHR$ VAL "INT (X/(256**2))"
60    LET X = VAL "X - (256**2)*CODE X$(LEN X$)"
70    LET X$ = X$ + CHR$ VAL "INT (X/256)" + CHR$ VAL
      "X - 256*INT (X/256)"
80    GOTO CODE " = "
100   FOR J = VAL "1" TO LEN X$ STEP VAL "3"
110   PRINT VAL "(256**2)*CODE X$(J) + 256*CODE
      X$(J + 1) + CODE X$(J + 2)"
120   NEXT J
```

Negative values can be incorporated, as in the following routine, adapted from the above by changing line 110 and the addition of line 35:

```
10    LET X$ = ""
20    INPUT X
30    IF NOT X THEN GOTO VAL "100"
35    LET X = VAL "X + 8388600"
40    IF X> = VAL "256**3" THEN GOTO CODE " = "
50    LET X$ = X$ + CHR$ VAL "INT (X/(256**2))"
60    LET X = VAL "X-(256**2)*CODE X$(LEN X$)"
70    LET X$ = X$ + CHR$ VAL "INT (X/256)" + CHR$ VAL
      "X - 256*INT (X/256)"
80    GOTO CODE " = "
100   FOR J = VAL "1" TO LEN X$ STEP VAL "3"
110   PRINT VAL "(256**2)*CODE X$(J) + 256*CODE
      X$(J + 1) + CODE X$(J + 2)-8388600"
120   NEXT J
```

I make no claim that the techniques described here exhaust all the possibilities. The best way to deal with any particular program depends on the order of the values which it is to handle Tailor the technique to meet each situation.

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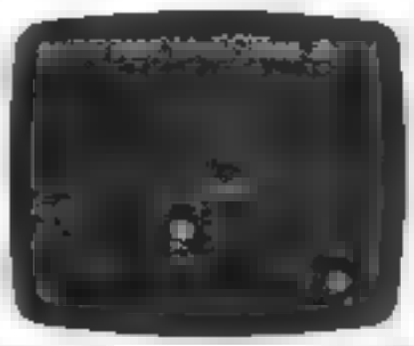

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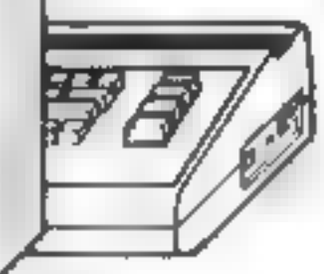

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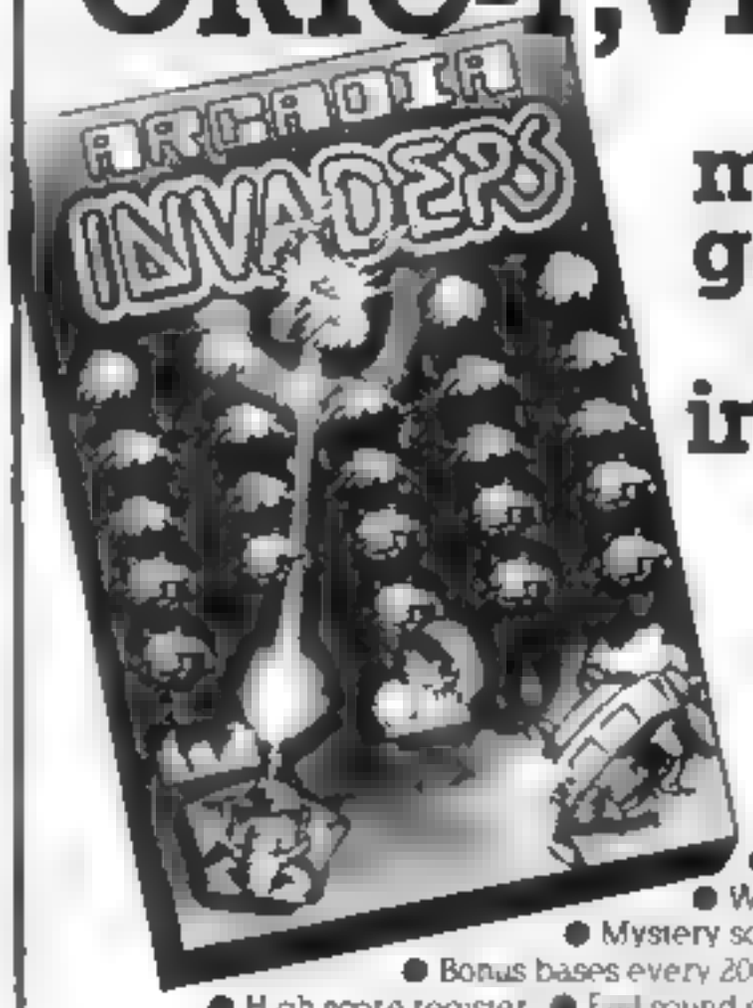

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As most VIC owners will know, the VIC-20, by use of the relocatable character set, can be used to display high resolution graphics.

For those have not encountered the term high resolution graphics, it's a system by which individual points on the screen can be addressed and altered so you can produce graphs or pictures.

The basic VIC-20 has no commands for such graphics, so you must buy a CBM Super Expander or a VICKIT to use high resolution graphics easily. The big problem is that any software using a specific aid will only run on a computer fitted with the same aid — programs are not portable between machines.

In order to provide portable high resolution graphics, I have developed Tiny Graph, see **Listing 1**, with an optional line-plotting program.

Due to the design of the 6522 chip, it can only access a character set located in the ROM space or in the unexpanded RAM area (i.e locations $1000 to $1FFF).

In a standard VIC, or a VIC with 3.5K expansion, this presents little problem since some of this memory area can be accessed When the memory is expanded by 8K or more, things get a little difficult.

The VIC relocates the screen memory to $1000 and the start of BASIC to $1200. Suddenly there is no free RAM for relocated character set.

A high resolution screen of 176 by 160 points requires some 3.5K of RAM for storage. This is conveniently the amount of space available in the unexpanded VIC. What is required is a rearrangement of the allocation of RAM space such that an expanded VIC has the same screen location as an unexpanded VIC.

The new memory map is shown in **Figure 1**. Since the Tiny-Graph kernel is roughly 660 bytes long, the start of BASIC must be artificially raised to above $226D This means that at least 8K expansion will be necessary in order to use the Tiny-Graph package

Don't worry if the memory arrangement is not clear, the software plus a simple command take care of everything.

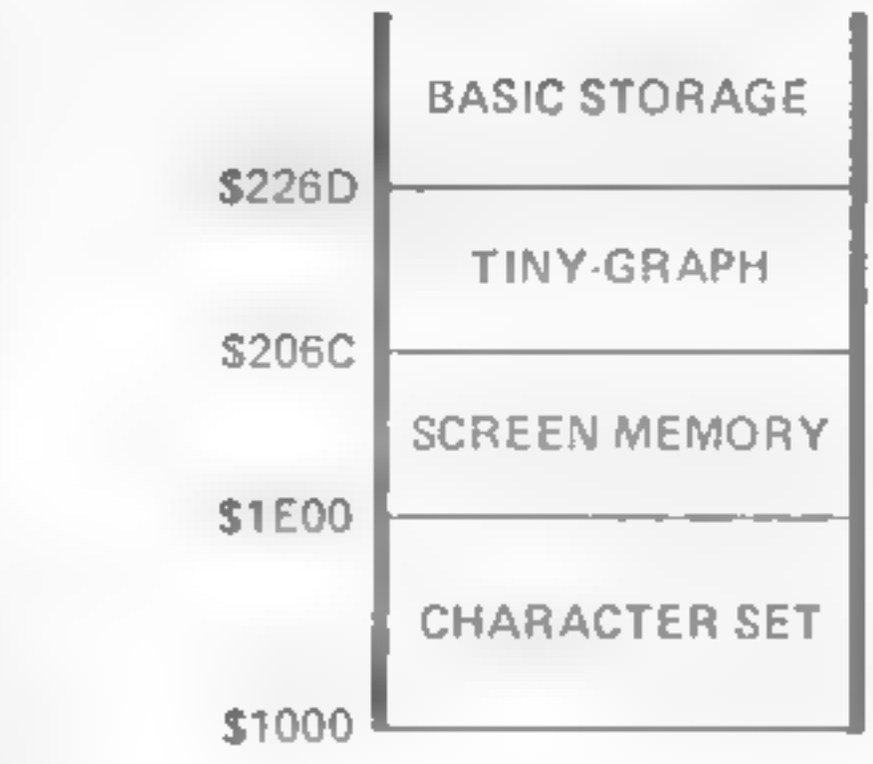


Figure 1

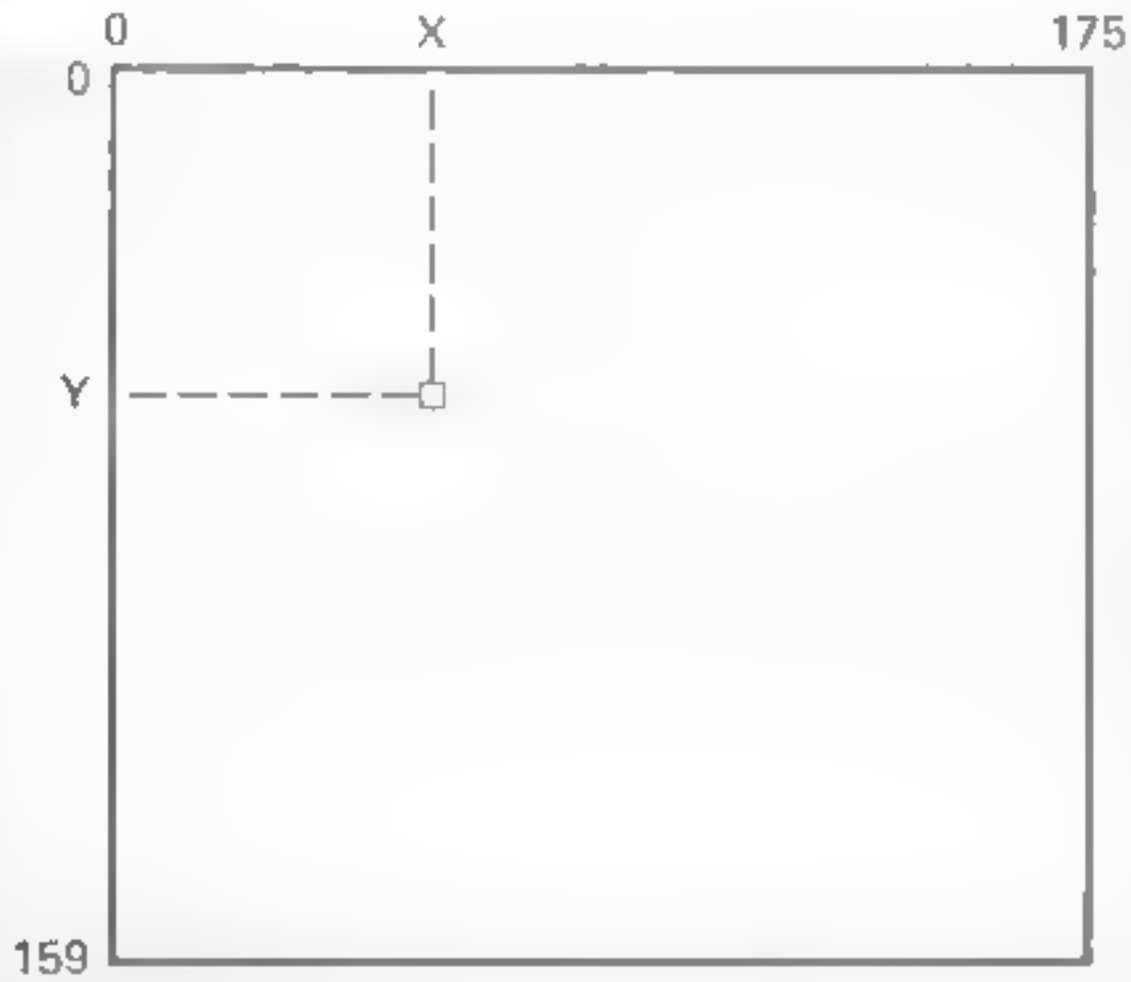


Figure 2

The VIC must be cold started by either switching it off and then on or by a SYS64802 call. This ensures that all vectors are reset. Type in the following line and press RETURN

```
POKE 641,0: POKE 642,35: POKE 648,30: sys 64824
```

This step resets the start of BASIC to $2300 and the screen position to $1E00.

Load and run the Tiny-Graph loader. The loader places the Tiny-Graph code into the area shown in **Figure 1**, and once run can be NEWed

To preclude any possible interference from toolkits or other ROMs using the Charget wedge, all Tiny-Graph commands use SYS calls

Before the plotting commands can be used, the high-resolution screen must be set up and cleared. This is done by a SYS(8200) call. This after this call has been made, you will see a clear screen which is slightly smaller than the usual screen. There will be no cursor

This screen, in fact, now consists of 28,160 addressable points. The screen is configured with a width of 176 points and a height of 160 points. The origin is in the top left hand corner — **see Figure 2.**

In order to simplify the description on the plotting commands, I have defined the various registers used by the package in **Table 1**. These registers will be referred to only by name from now on.

The first four commands perform actions on single points on the screen In all cases the X coordinate of the point is POKEd into XP and the Y coordinate into YP

SYS 8505 will set or clear the point. A value of 1 in FLAG sets the point and a value of 0 clears it.

SYS 8610 flips the point, i.e. a set point is cleared and a cleared point set.

SYS 6581 tests the status of the point and returns a value in TEST. If the point is set, TEST contains 1. A cleared point returns a value of 0.

SYS 8659 will change the colour of the point to that in COLOUR, i.e. if COLOUR contains 0 then the point will be changed to black.

In order to get points of a ▶

Listing 1

```
10 REM ************************************
20 REM *                                  *
30 REM *        TINY-GRAPH KERNAL         *
40 REM *                                  *
50 REM ************************************
60 DATA72,152,72,138,72,169,252,141,5,144
70 DATA169,21,141,3,144,169,0,133,87,170,165
80 DATA87,157,0,30,169,6,157,0,150,230
90 DATA87,232,224,220,208,239,169,0,133,87
100 DATA169,16,133,88,162,0,160,0,169,0
110 DATA145,87,200,192,22,208,247,232,224,160
120 DATA240,16,24,165,87,105,22,133,87,165
130 DATA88,105,0,133,88,76,55,32,104,170,104,168,104,96
140 FORL=8200TO8284:READX:POKEL,X:NEXT
150 DATA173,169,2,74,74,74,74,141,170,2,170,169,0,141,171,2,141,172,2,224
160 DATA0,240,20,24,173,171,2,105,22,141,171,2,173,172,2,105,0,141,172,2
170 DATA202,208,236,173,169,2,74,74,74,74,141,173,2,24,173,171,2,109,173,2,141
180 DATA171,2,173,172,2,105,0,141,172,2,173,170,2,10,10,10,10,56,141,174
190 DATA2,173,169,2,237,174,2,141,174,2,173,172,2,141,175,2,173,171,2,141
200 DATA176,2,162,4,173,175,2,10,141,175,2,24,173,176,2,10,141,176,2,144
210 DATA8,173,175,2,105,0,141,175,2,202,208,228,24,173,176,2,109,174,2,141
220 DATA176,2,173,175,2,105,16,141,175,2,173,173,2,10,10,10,141,177,2,56
230 DATA173,169,2,237,177,2,141,177,2,56,169,7,237,177,2,141,177,2,169,1
240 DATA174,177,2,24,0,240,4,10,202,208,252,141,178,2,173,176,2,133,1,173
250 DATA175,2,133,2,96,72,152,72,138,72,32,111,33,32,108,32,104,170,104,168,104,96,32
260 DATA111,33,32,108,32,173,179,2,240,10,160,0,177,1,13,178,2,145,1,96
270 DATA160,0,56,169,255,237,178,2,141,178,2,177,1,45,178,2,145,1,96,173
280 DATA168,2,201,175,144,5,169,175,141,168,2,173,169,2,201,159,144,5,169
290 DATA159,141,169,2,96,169,0,141,180,2,32,111,33,32,108,32,160,0,177,1,45
300 DATA178,2,240,5,169,1,141,180,2,96,72,152,72,138,72,32,136,33,173,180
310 DATA2,208,12,160,0,177,1,13,178,2,145,1,76,205,33,160,0,56,169,255
320 DATA237,178,2,141,178,2,177,1,45,178,2,145,1,104,170,104,168,104,96
330 DATA 72,152,72,138,72,32,111,33,32,108,32,173,171,2,133,1,24,173,172
340 DATA 2,105,150,133,2,173,181,2,145,1,104,170,104,168,104,96
350 DATA 72,152,72,138,72,206,182,2,173,183,2,141,168,2,32,71,33,173,171,2
360 DATA 133,1,24,173,172,2,105,150,133,2,173,181,2,145,1,206,183
370 DATA 2,173,183,2,205,182,2,208,219,104,170,104,168,104,96
380 DATA 72,152,72,138,72,206,182,2,173,183,2,141,169,2,32,71,33,173,171,2
390 DATA 133,1,24,173,172,2,105,150,133,2,173,181,2,145,1,206,183
400 DATA 2,173,183,2,205,182,2,208,219,104,170,104,168,104,96
410 DATA 67,32,49,57,56,51,32,65,32,69,32,87,69,66,66,96
420 DATA 72,152,72,138,72,206,192,2,173,183,2
430 DATA 141,168,2,32,136,33,173,180,2,208
440 DATA 12,160,0,177,1,13,178,2,145,1
450 DATA 76,162,34,160,0,56,169,255,237,178
460 DATA 2,141,178,2,177,1,45,178,2,145
470 DATA 1,206,183,2,173,183,2,205,182,2
480 DATA 208,201,104,170,104,168,104,96
490 FORI=8300TO8382
500 READX:POKEI,X:NEXT
1000 REM ************************************
1010 REM *                                  *
1020 REM *       OPTIONAL LINE-PLOT         *
1030 REM *                                  *
1040 REM ************************************
1050 DATA72,152,72,138,72,173,180,2,56,237,184,2,141,188,2,173,187,2,56,237
1060 DATA185,2,141,189,2,169,1,141,190,2,141,191,2,173,189,2,16,10,160,255
1070 DATA140,190,2,141,191,2,56,173,184,2,237,186,2,141,188,2,173,187,2,16,10,160,255,140,191
1080 DATA2,141,187,2,165,87,141,184,2,165,88,141,185,2,169,0,141,186,2,173,184,2,56,237,186,2,141,188,2,16
1090 DATA35,169,255,141,187,2,169,0,141,186,2,173,184,2,141,187,2,173,185,2
1100 DATA141,188,2,173,189,2,48,5,169,1,141,195,2,76,71,35,169,0,141,195
1110 DATA2,169,255,141,187,2,173,184,2,56,237,186,2,141,188,2,173,189
1120 DATA2,48,5,169,1,141,196,2,173,197,2,141,199,2,56,237,198,2,141,200
1130 DATA2,173,199,2,141,201,2,78,197,2,173,198,2,56,237,197,2,141,202,2
1140 DATA173,184,2,141,168,2,173,185,2,141,169,2,32,57,33,173,202,2,16,30
1150 DATA24,109,201,2,141,202,2,173,184,2,24,109,196,2,141,184,2,173,185,2
1160 DATA24,109,195,2,141,185,2,76,180,35,56,237,200,2,141,202,2,173,184,2
1170 DATA24,109,191,2,141,184,2,173,185,2,24,109,190,2,141,185,2,206,199,2
1180 DATA48,3,76,103,35,160,0,104,170,104,168,104,96
1190 FORA=8883TO9155:
1200 READX:POKEA,X:NEXT
```

specified colour, follow SYS 8505 with SYS 8659. Here's an example:

```
10 SYS 8200: POKE 691,1
20 FOR X=0 TO 159: Y=X
30 POKE 680,X: POKE 681,Y:
POKE 693, RND(1)*8
40 SYS 8505: SYS 8659: NEXT X
```

The last commands draw straight lines. These are simplified routines in that they deal with either vertical or horizontal lines.

Since these routines plot only horizontal or vertical lines, the line can be specified by three values. These must be POKEd into the relevant registers before the SYS command. Additionally, the registers are changed by the plotting routines and must be re-entered prior to subsequent calls.

SYS 8694 draws a horizontal line. The Y coordinate is placed in YP, and the starting and finishing X coordinates into LSTART and LEND. The routines do not check to see that LSTART is less than LEND. You must ensure that. The colour of the line is put into COLOUR and the type of line — set or clear — into FLAG.

SYS 8746 draws a vertical line. The X coordinate is placed into XP, and the Y coordinates into LSTART and LEND. The colour and line type are set as before.

SYS 8814 flips a horizontal line. This command examines the points along a specified line and flips the status of each point. The coordinates of the line are input as for the draw horizontal line command.

There's a simple example in **Listing 2.**

That completes the description of the commands controlling the Tiny-Graph Kernel. I call the routines the kernel since they provide all the fundamental routines necessary to perform any drawing operation. These routines have been fully tested and are believed to be free from bugs.

I will give details of a further optional line plotting routine which is still at the development stage. This routine contains a small bug but can be made to perform acceptably. This routine will draw or clear (depending on FLAG) a line between two points. If the points have coordinates (X1,Y1), (X2,Y2) then the routine is set up by:

POKE 696,X1: POKE 697,Y1.
POKE 698,X2: POKE 699,Y2:
SYS 8883

The routine misbehaves if the distance between both sets of coordinates exceed 128, i.e. ABS(X1-X2) 128 and ABS(Y1-Y2) 128.

It has also been known to misbehave if only one set of coordinates violate the above condition. So, provided you ensure that this cannot happen, the routine will do its job.

The routine has been given as a separate listing, but it can be tagged onto the end of the Kernel coding. If you use it, allow for the new length of the code by changing the memory initialization command to:

POKE641,0: POKE642,37:
POKE648,30: SYS 64824

Whilst the ability to print text on the high resolution screen has been omitted from Tiny-Graph, this can be done easily. The routine in **Listing 3** will print a character (inA$) as specified X,Y coordinates.

Line 90 overlays the character

Listing 2

```
10 SYS 8200: POKE 691,1
20 FOR Y = 0 TO 159 STEP 4
30 POKE 694,0: POKE 695,175: POKE 681 Y
40 C = INT(RND(1) *3): IF C=1 THEN 40
50 POKE 693,C: SYS 8694: NEXT Y
60 FOR X = 0 TO 175 STEP 4
70 POKE 694,0: POKE 695   ,59: POKE 680, X
80 C = INT(RND(1)*3): IF C=1 THEN 80
90 POKE 693,C: SYS 8746: NEXT X
100 FOR Y = 0 TO 159
110 POKE 694,0: POKE 695,175: POKE 691,Y: SYS 8814: NEXT Y
```

Table 1

Location	Name of register.	Function.
680	XP	X coord. of point
681	YP	Y " "
691	FLAG	Decides SET or CLEAR
692	TEST	Result of point test.
693	COLOUR	Colour of point.
694	LSTART	Start point of line
695	LEND	End point of line

onto the high resolution screen, thus preserving the previous contents. Line 110 sets the text to the colour specified by CL.

Lines 40 to 60 convert the ASCII code for the input string to the position of the character in the character set. For the lower case character set add 128 to CH.

For reverse field test, change line 90 to:
POKE PL, 255 — (PEEK(PL) OR PEEK(32768 + CH*8 + I))

In order to save space, commands for drawing circles, boxes, dotted lines etc. have been omitted It would be perfectly feasible, if you wish, to write such commands using Tiny-Graph as a source of subroutines. I'll list some useful entry points.

$216F (INCHK) checks that the X coordinate ($02A8) and Y coordinate ($02A9) of a point are in the range of the high resolution screen. Out of range values are set to the maximum value for that coordinate

$206C (POINT) calculates the character position ($01,$02) and the position of the bit mask ($02B2) for a point. The X and Y coordinates must be set up in $02A8 and $02A9 before calling. The accumulator, X and Y registers are used during this routine and any values used in other routines must be saved (eg on stack) before calling POINT.

$2147 (DRAWP) draws a point at X,Y coordinates specified in $02A8 and $02A9. The type of point is specified in $02B3 (1 = set, 0 = clear).

The point is set or cleared by To set. Logically OR the character position with the bit mask.
To clear: Logically AND the character position with (255-bit mask).

$2188 (TEST) tests a point at X,Y coordinates specified in $02A8 and $02A9 and puts the result into $02B4. (1 = set, 0 = clear)

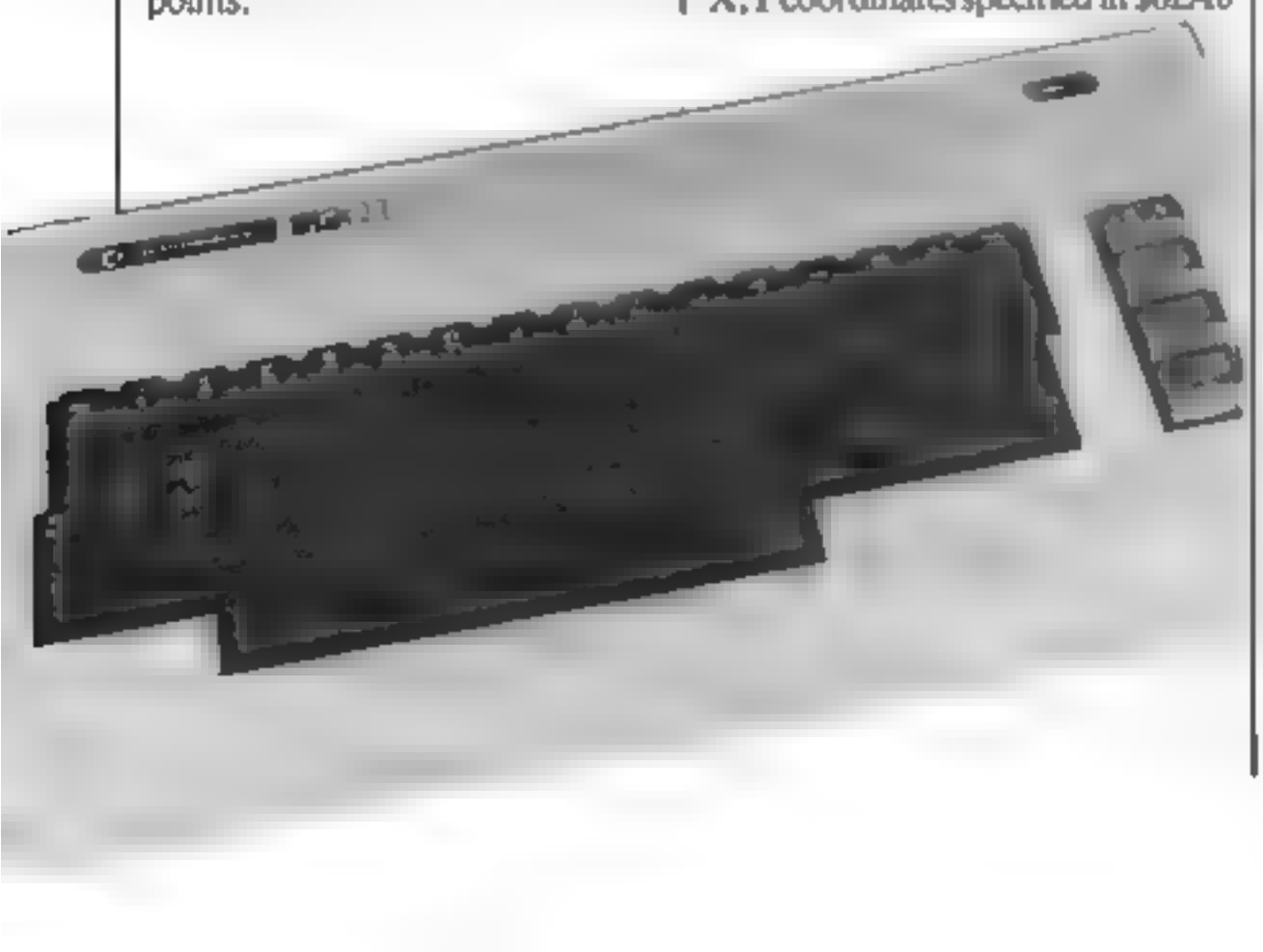
Listing 3

```
10 Z = INT(Y/2+.5)
20 CP = (Z-1)*22+X
30 OF=0: IF INT(Y/2)=Y/2 THEN OF=8
40 A = ASC(A$)
50 A = A+(A>191)*96
60 CH = A+(A<63 AND A<96)*64+(A>96 AND A<128)*32+(A>159)*64
70 FOR I = 0 TO 7
80 PL = 40*6+OF+(CP-1)*16+I
90 POKE PL, PEEK(PL) OR PEEK(32768+CH*I)
100 NEXT I
110 POKE(38400+(X-1)+(Y-1)*22),CL
```

$21A2 (FLIP) flips the status of a point at X,Y coordinates specified in $02A8 and $02A9

$21D3 (COLOUR) sets the colour of a point at X,Y coordinates specified in $02A8 and $02A9 to the value in $02B5

I have tried to produce a package which while being small will give the widest range of plotting capabilities. Hopefully, machine code buffs will consider developing routines to extend the package.



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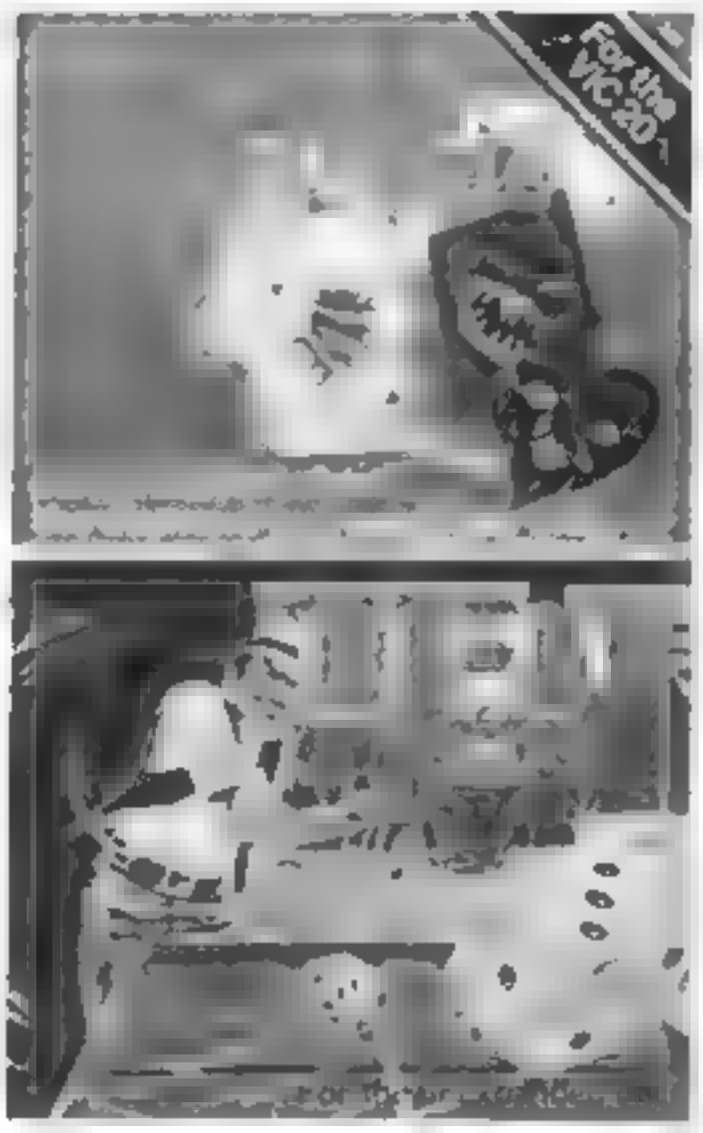

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Share the fun with a game written for two

Family and friends can join in with David Nowotnik's Four-in a Row game for both Spectrum models

Most video games are essentially anti-social They involve one player battling against forces generated by the computer.

And while this provides enjoyment for the player, it could be irritating other members of the family — all those zaps and explosions for hours on end

If all that sounds painfully familiar to you, and maybe your conscience is getting to you, then here's a friendly little game for two to play on the Spectrum.

While not guaranteed to restore family harmony, you may find that it removes at least some of the hostility towards you and your beloved computer.

Of the few video games for more than one player, most are based on non-video games which are commercially available. This one is no exception

The name, Four-in-a-Row, describes the objective — to create a row (horizontally, vertically, or diagonally) of four of your counters on a four-by-four matrix, and prevent your opponent from doing the same

The matrix will appear on the screen as 42 round holes in a black board

Each player takes turns to drop a counter of his/her colour into one of the seven columns, by pressing the appropriate key, 1 to 7, as shown on the screen. Once a key is pressed, the counter will appear on the screen just above the selected column of the matrix.

After a short pause, the counter will fall down the column until it reaches the lowest available position

The second player makes his/her selection, and the procedure is repeated.

The game continues until one player achieves the objective. At this point, the four counters which form the row of four flash on and off to provide visual confirmation of victory

The program is suitable for both 16K and 48K Spectrums Once you have typed the program into your computer, it is started with RUN.

One point to note when entering the program: the characters A. B. C, D in lines 560, 570, and 740 should be entered in graphics mode.

They become the user-defined characters forming the counters and 'board' once the program is RUN. (Re-LIST the program after RUN to confirm this).

The colours of the background and counters are quite distinct on a colour TV set, but their corresponding shades of grey on a black and white set may need improvement

To do this, try altering the values of INK and PAPER commands, and the colours of the counters (defined in line 600).

```
 10 REM  Four-in-a-row
 20 REM  D.P. Nowotnik, 1982
 30 REM  Initialise
 40 DIM a$(7,6):DIM l(4):DIM c(2)
 50 LET t=USR"a"
 60 READ a:IF a=-1 THEN GOTO 500
 70 POKE t,a:LET t=t+1:GOTO 60
100 REM  Win Check
110 IF a$(i,j)=" " THEN LET c=0: LET b$=" ":
RETURN
120 IF a$(i,j)<>b$ THEN LET c=1: LET b$=a$(i,j):
LET l(c)=2*i+j*64+22663: RETURN
130 LETc=c+1: LET l(c)=2*i+j*64+22663: IF c=4 THEN
LET win=1
140 RETURN
150 REM Horizontal Check
160 FOR i=1 TO 6: LET b$=" "
170 FOR j=1 TO 7: GO SUB 100: IF win THEN RETURN
180 NEXT i: NEXT j
190 REM Vertical check
200 FOR i=1 TO 7: LET b$=" "
210 FOR j=1 TO 6
220 GO SUB 100: IF win THEN RETURN
230 NEXT j: NEXT i
240 REM Diagonal Check 1
250 FOR k=4 TO 9: LET i=k: LET j=1: LET b$=" "
260 IF i>7 THEN LET i=7: LET j=k-6
270 GO SUB 100: IF win THEN RETURN
280 LET i=i-1: LET j=j+1: IF j<7 AND i>0 THEN GOTO
270
290 NEXT k
300 REM Diagonal Check 2
310 FOR k=4 TO -1 STEP-1
320 LET i=k: LET j=1: LET b$=" "
330 IF i<1 THEN LET i=1: LET j=2-k
340 GO SUB 100: IF win THEN RETURN
350 LET i=i+1: LET j=j+1: IF j<7 AND i<8 THEN GOTO
340
360 NEXT k
370 RETURN
400 REM  Print/erase counter
410 POKE s,r: POKE s+1,r
420 POKE s+32,r: POKE s+33,r
430 RETURN
500 REM Main Routine
510 BORDER 5: PAPER 5: INK 0
520 CLS
530 LET win=0
540 PRINT AT 1,10;"Four-in-a-row"
550 FOR i=6 TO 16 STEP 2
560 PRINT AT i,9; PAPER 0; INK 7;"ABABABABABABAB"
570 PRINT AT i+1,9; PAPER 0; INK
7;"COCDCDCDCDCDCD"
580 NEXT i
590 PRINT AT 3,9; PAPER 7; " 1 2 3 4 5 6 7"
600 LET c(1)=2: LET c(2)=4
610 LET p=1
620 LET q$="          "
630 FOR i=1 TO 7: IF a$(1,1)=" " THEN GO TO 650
640 NEXT i: GO TO 2000
650 PRINT AT 0,0;"Player ";p; AT 10,2;"Enter"; AT
11,0;" 1 to 7"
660 LET z$=INKEY$
670 IF z$<"1" OR z$>"7" THEN GO TO 660
680 LET z=VAL z$: IF a$(z,1)<>" " THEN GO TO 660
690 FOR g=6 TO 1 STEP -1
700 IF a$(z,g)<>" " THEN NEXT g
710 LET a$(z,g)=STR$ p: LET g=g-1
720 FOR i=8 TO 12: PRINT AT i,0;q$: NEXT i
730 LET t=7+2*z: LET s=22720+t
740 PRINT INK c(p); AT 4,t;"AB"; AT 5,t;"CD"
750 GO SUB 150
760 PRINT AT 4,t;"  "; AT 5,t;"  "
770 FOR j=1 TO g+1
780 LET r=c(p): GO SUB 400
790 BEEP .5,10-4*j: IF j=g+1 THEN GO TO 810
800 LET r=7: GO SUB 400
810 LET s=s+64: NEXT j
820 LET p=1+(p=1)
830 IF NOT win THEN GO TO 630
840 LET p=1+(p=1)
850 REM  Announce Winner
860 PRINT AT 8,0;"Player ";p
870 PRINT FLASH 1; AT 10,0;" has won "
880 FOR i=1 TO 10
890 FOR k=1 TO 4
900 LET s=l(k): LET r=7: GO SUB 400
910 NEXT k
920 FOR k=1 TO 4
930 LET s=l(k): LET r= c(p): GO SUB 400
940 NEXT k: NEXT i
950 PRINT AT 21,6; PAPER 7;"Another game (y/n)"
960 GO TO 960+40*(INKEY$="y")+10*(INKEY$="n")
970 STOP
1000 RUN
2000 PRINT AT 19,10; PAPER 7;"Stalemate!"
2010 GO TO 950
9000 DATA 0,7,31,63,63,127,127,127
9010 DATA 0,224,248,252,252 254,254,254
9020 DATA 127,127,127,63,63,31,7,0
9030 DATA 254,254,254,252,252,248,224,0
9040 DATA -1
```

Fast moving graphics for your BBC micro

Create some spectacular graphics for games. Jeremy Riggs shows you how with a program to try

You may have seen sprite graphics on computers such as the Commodore 64 and the two Atarıs.

They are graphics characters, such as the ones BBC micro owners are able to define using the VDU23 command, with the ability to move across the screen not disturbing other graphics or the background

This effect can be achieved very easily on the BBC by using the GCOLx,y command. This command has two parameters, x and y where y is the logical colour to be used in any subsequent graphics.

The x parameter can have five values (0 to 4), each having a different action, as explained on page 262 of the user manual

The value we are interested in is 4, which has the action of inverting the colour already there. In my demonstration program, for both BBC models, a background is set up (lines 40-120) and a ball is bounced around the screen without deleting the background (lines 160-210).

This is achieved by using the GCOL4,y command and printing a ball twice at the same position. The first time the ball is printed it inverts the colour already there and a ball appears. The second print reverses the action and replaces the background. To slow down the action press the space bar (see line 190)

This technique is very useful and can lead to some spectacular graphics for games and for other applications.

```
 10 REM SPRITE REPRESENTATION
 20 REM ON THE BBC MICRO A or B
 30 REM By J.P.Riggs
 40 MODE4
 50 FORXX=0 TO 1280 STEP50
 60   MOVEXX,0:DRAWXX,1024:NEXT
 70 FORXX=0 TO 1024 STEP50
 80   MOVE0,XX:DRAW1280,XX:NEXT
 90 VDU26:MOVE0,0
100 FORXX=0 TO 1280 STEP 50
110   PLOT85,XX,RND(500)
120   PLOT85,XX+100,0:NEXT
130 VDU23,224,60,126,255,255,255,255,126,60
140 VDU5:XX=60:YX=523:PX=40:QX=-40
150 GCOL4,1
160 REPEAT:MOVE XX,YX:PRINTCHR$224
170   IF XX>1279 OR XX<1 PX=-PX:PROCbeep(50)
180   IF YX>1023 OR YX<1 QX=-QX:PROCbeep(30)
190   IF ?736=226 OR ?715=226:GOTO190
200   MOVE XX,YX:PRINTCHR$224
210   XX=XX+PX:YX=YX+QX:UNTIL0
220 DEFPROCbeep(I):SOUND1,-15,I,1:ENDPROC
```


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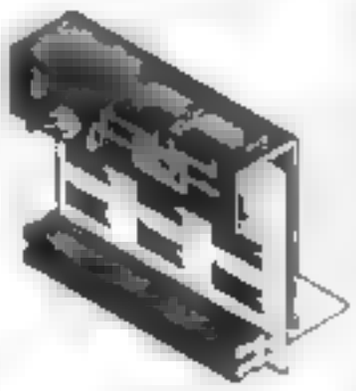

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ZX Trek
Spectrum 48K £5

Impact Software, 70 Redford Avenue, Edinburgh EH13 0BW 0BW

Star Trek, based on the TV programme of the same name, was one of the original computer game classics. This version has all the features of the original, plus several refinements.

A two dimensional graphics display of long and short range scans and a wealth of textual status reports guide you as you voyage the known galaxy, eliminating Klingons and Romulans, using starbases to repair and refuel the Enterprise.

Written in Basic, this is a fairly slow game, and keys often need to be held down before they respond. The instructions supplied are comprehensive and lengthy and need careful reading — frequent reference to them is also necessary when playing. But nowhere in the instructions is the number-direction relationship properly explained.

Colour is used well. Sound effects are optional, but using sound slows the game down. Graphics are poor; letters represent the enemy's ships, and the display tends to be confusing

Since the game takes a long time to complete, a save game feature would have been useful, but there isn't one.

A good version of an old favourite. A year ago it would have been superb; today it has been superseded by machine-coded multigraphical variations such as Time Gate. **R E.**

instructions	85%
playability	50%
graphics	50%
value for money	60%

Games without frontiers

You can be a tank commander one minute and a space fighter the next with these new games for your micro. Our reviewers have played them — here are their ratings

Slippery Sid
Spectrum
£5.95

Silversoft, 20 Orange Street, London WC2H 7ED

In this game you use the keyboard or a Kempston joystick to control a large snake called Slippery Sid. Sid must eat all the frogs within a walled garden without hitting the walls or any of the poisonous toads that appear every time he swallows a frog

As Sid eats the frogs he gets longer and steering him around becomes more difficult — he will die if he attempts to eat himself!

Magic mushrooms grow in the garden. If Sid eats one of these, he may swallow one poisonous toad. As Sid clears the garden of frogs, he finds himself in another garden with more walls and a larger number of frogs.

The instructions supplied are adequate and the program LOADed every time. You are given five skill levels (the speed at which Sid moves) and highest score is recorded, but not the player's name. On entering the fourth garden, you get an extra life (you start with three).

The review copy seemed to have a bug that caused Sid to randomly change direction at the most inconvenient times. Even with this added handicap Slippery Sid is a highly addictive and enjoyable game.

It is simple in operation and the increasing difficulty level from garden to garden is well balanced to give the beginner and expert alike a good run for their money. **P.F.**

instructions	80%
playability	85%
graphics	75%
value for money	75%

QS Asteroids
16K ZX81
£3.95

Quicksilva, Palmerston Park House, 13 Palmerston Road, Southampton.

A surprisingly realistic game, considering the limitations of the ZX81's character set. It follows the standard arcade format, with wraparound screen, bonus ships and on-screen scoring.

Controls, too, are of the standard arcade type and can be operated simultaneously — very useful for spinning and firing at the same time.

The only drawback is the use of numbers to represent the eight possible directions the ship can point in, but those of you with programmable character boards will be able to substitute characters of your own in their place.

A well-produced cassette insert contains easy-to-follow, no-nonsense operating and loading instructions. Also included is a card listing useful variables such as number of ships and score for bonus ships.

Provision to control the game via switches connected to two eight-bit ports has been included in the program. The manufacturers will send details if you send them an SAE **D.S.**

instructions	90%
playability	60%
graphics	70%
value for money	90%

Asteroids 16K ZX81 £4.95

Microgen, 24 Agar Crescent, Bracknell, Berks

It's baffling. Why does a company with all the makings of a good version of this arcade classic release it before it's ironed out a couple of glaring faults?

The graphics are nice enough: good chunky asteroids that shatter satisfyingly into fragments when you fire at them (five different sizes of fragment, according to the inlay, but who's counting?).

As well as blasting the asteroids themselves, you can also fire at other unidentified flying objects to gain extra points.

There are ten different speed levels on offer, and on the fastest (1), the action is very fast indeed. I'd hesitate to call these skill levels, though, since as the asteroids slow down, you slow down too.

In practice this means that the slow levels aren't really easier than the fast ones, and have the added hazard that, once you have cleared the screen a little, you may nod off during the long periods where nothing happens. Nothing below level 5 is worth considering.

More seriously, beware of the thrust button. Press it and you spin wildly out of control, and taking your finger off the key has no effect. All you can do is relax and enjoy the scenery until you crash into something and are reincarnated (supposing any of your three lives are left).

Because you can't actually avoid any of the asteroids, the skill content of the game is drastically reduced. Much the best tactic, certainly until the screen has been cleared of the larger fragments, is to sit tight with your fingers jammed on the rotate and fire buttons. You can get quite a high score that way and, while you are spinning, you seem to gain some immunity to being hit.

The game usually ends when your fingers go numb and slip off the keyboard. There is an option to use joysticks, but it's probably fortunate that few ZX81 owners have them, otherwise the game could go on all night.

C.G.

instructions	70%
playability	50%
graphics	75%
value for money	30%

★★

Frogger Plus .Video Genie

[illegible]

Buttercraft Software, 14 Western Avenue, Riddlesden, Keighley, Yorks.

A machine-code version of the arcade game, you have to move your frogs safely across a busy road then over a river, using turtles, lily pads and logs as stepping stones. But watch out for the crocodiles!

Though instructions on how to get into the game are displayed, the rules are not clearly stated, and knowledge of the arcade version seems to be assumed. The instructions state that sideways movement is via the "<" and ">" keys. But both of these are shifted characters, and "." and ",", the unshifted versions of the same keys, work just as well.

Reasonable graphics, considering the low resolution offered by the 2 x 3 pixel screen, but you really need a sound box to take advantage of all the effects.

R.M.D.

instructions	60%
playability	75%
graphics	75%
value for money	50%

★★★

Wargame TRS-80 16

TX Software, 109 Abbotsweld, Harlow, CM18 6TQ

Wargame, as its name suggests, tests your skill as a strategist and marksman against that of the computer or another player.

The display shows you a randomly produced map, depicting hills, forests, swamp and water together with flat terrain on which each player has three home bases. You are in command of a number of tanks and guns, and have the task of attacking and destroying your opponents' bases as well as defending your own.

Tanks and artillery are moved across the varying landscape using either a combination of keys or joysticks, and an advantage can be gained or a disadvantage incurred, depending on where you place your pieces.

When you are within range of an enemy base, entering fire mode displays a range and direction finder on the screen to help you get the target in your sights. This proves quite tricky to use and practice is needed in order to become a competent marksman.

Graphic display and colour are used efficiently, enabling you to easily identify your, and your opponents' pieces and the nature of the terrain you intend to move into. Some sound is used for shell explosions and the running down of tank engines when they are hit.

The program runs smoothly without any apparent bugs in loading or playing. Instructions are not displayed on screen, but a fairly adequate set of printed instructions are included in the package. A set of options enable you to vary the speed of your tanks or the firing range of your guns, and these along with three skill levels, add to the variety of the game.

The game lasts a reasonable amount of time, and makes a refreshing change from being blown out of hyperspace in ten seconds flat. It is quite slow moving, but then the emphasis is on strategy, and there is plenty to think about during the game

At the price, a worthwhile acquisition for anyone who enjoys these boardgame-type of programs.

D.B.

instructions	60%
playability	70%
graphics	70%
value for money	60%

★★★

Invaders 32K BBC £7.50

IJK Software, 9 King Street, Blackpool, Lancashire

This is a full feature implementation of the arcade game, with six rows of eight invaders descending and bombing your base and three shields. Good for beginners and experts alike, having an increasing difficulty level, it is written in machine code and uses to the full the sound and colour graphics of the BBC

The packaging is drab and instructions simply consist of how to load, added by a rubber stamp. But the program loaded first time and a clear and concise set of instructions was presented on screen

Playing the game was enjoyable and just proves that you cannot keep a good game down. The keys Z and X for left and right with the space bar to fire are easy to use and respond to the slightest press

Apart from the basic version you can set up your own game by varying any of the features: fast or slow missiles, shields or no shields, even invisible Invaders!

The only improvement I can think of would be a chart of high scores and player's names: the highest score is kept and displayed anyway

R.E.

instructions	85%
playability	85%
graphics	90%
value for money	90%

★★★★

Fill yourself with fruit, but watch out for the goblin

Every game is different when you play Simon Scott's Munch Maze.It's in two parts to make best use of memory in the unexpanded VIC-20

My Munch Maze game, for the unexpanded VIC-20, gives you a new challenge every time you play because it draws a fresh maze.

It takes about 10 seconds to create the maze and then fruit — apples, bananas and lemons — are placed at random. When this is done all the dots on the screen start to flash which means the game is in progress.

You have to move around the maze eating the dots, at one point each, and the fruit, which score 10 points each

Avoiding at all costs the pulsating goblin which is wandering around the maze. The consequences of meeting him could be fatal...and you have only got one life.

If you manage to clear all the dots and fruit the goblin turns into a gravestone while the maze is being replenished with dots and fruit

Main variables

MA your man
FL flags
C colour
FNP (x) goblin (function P(x))

```
0 POKE36865,200:POKE36879,25:POKE36878,1
5
1 PRINT"sQQ]]]]]R←                    L
2 PRINT"←]]]]]R MUNCH MAZE L
3 PRINT"]]]]]R←                       r
4 FORSC=150TO38STEP-.5:POKE36876,(SC/2)+
150:POKE36865,SC:NEXT:POKE36878,245:POKE
36878,0
5 FORY=1TO400:NEXT
6 PRINT"Q      pBY ₤S.SCOTT":POKE36874,2
00:FORY=1TO400:NEXT:POKE36874,0
7 PRINT"Q←     PLEASE WAIT_J
20 POKE52,28:POKE56,28:POKE51,0:CLR
22 FORI=0TO511
24 POKE7168+I,PEEK(32768+I):NEXT
26 FORI=272TO367
28 READ J:POKE7168+I,J:NEXT
34 DATA0,24,126,219,255,102,24,0
35 DATA24,60,60,90,126,36,60,24
36 DATA0,0,56,40,56,0,0,0
37 DATA0,0,56,56,56,0,0,0
38 DATA0,56,56,16,124,16,40,68
39 DATA8,28,8,62,8,20,34,0
40 DATA16,8,110,253,253,122,126,60
41 DATA0,0,24,52,122,122,60,24
42 DATA0,0,1,198,238,124,56,0
43 DATA16,56,108,68,108,109,124,124
44 DATA16,24,28,24,16,16,16,16
45 DATA255,255,255,255,255,255,255,255
49 POKE198,0
50 PRINT"SQQQQQQQQQQ]]]]]←INSTRUCTIONS
51 GETA$:IFA$=""THEN53
52 GOTO54
53 FORK=1TO90:NEXT:PRINT"SRQQQQQQQQQQ]]]
]]←INSTRUCTIONSL":FORK=1TO90:NEXT:GOTO50
54 IFA$="N"THENPRINT"QQQ]p]OK! ←LOAD PAR
T 2 OF]]]]Q]]]◢MUNCH MAZE←...":END
55 IFA$="Y"THEN60
56 GOTO50
60 POKE36879,238:PRINT"s"
61 PRINT"s"CHR$(14)" ◢xxx instructions
◢xxx
62 PRINT"Q←THE IDEA OF THIS GAME IS TO C
LEAR AS MANY   MAZES OF PILLS AND    FRU
IT AS ;
63 PRINT" YOU CAN,·    BEFORE THE GOBLIN
     CATCHES YOU!"
64 PRINT"yOU SCORE ◢1← POINT FOR A PILL
AND ◢10← POINTS  FOR A PIECE OF FRUIT.
65 PRINT"yOU WILL OBTAIN A ◢FLAG←EVERY T
IME YOU CLEAR ASHEET.THESE WILL BE    SHO
```

Hints on conversion

Because of the special register I have used to create the user-defined characters you would have to look up the method used by your computer. You could replace them with standard characters.

All sound and screen locations would have to be changed. These are the main locations I have used:
36878 volume setting
36874-36877 sound channels and white noise generator
36879 colour of screen and border
36869 used to switch between user-defined and standard character set
7680-8185 screen location
38400-38905 colour locations
30720 difference between screen and colour locations
PEEK (197) screen key being pressed

At the beginning of every game a flag appears to show how many you have managed. My personal best is 11 flags — beat that.

When the game starts you are at the bottom left hand corners and the goblin is in the top right hand corner. To move around the maze use the following keys:

A left
D right
X down
W up

You cannot use a joystoick because of the shortage of memory.

This lack of memory also means that the program is in two parts. The first gives instructions and defines the new characters from data continued in the program.

The second part is the main Munch Maze game. When the first program has been loaded and run type NEW and press return, or type SYS64802 and press return. Both will clear the program from memory, but leave the defined characters.

Now type LOAD and press return to load the second part which will utilise the characters defined in the first

If you want to make the game much more challenging you could make the maze invisible by, in line 1, changing POKE 36879,24 to POKE 36879,104 and change line 7 from black (solid square) to blue (reverse field left arrow).

```
WN AT";
66 PRINT" THE BOTTOM OFTHE SCREEN.'
70 PRINT"↓↓Q  ↓pRESS ANY KEY"
71 POKE198,0
72 GETA$:IFA$=""THEN72
73 PRINTCHR$(142) s↓↓↓p*** ◢CONTROLSp ***
*"
74 PRINT"QQQp↓↓↓↓↓↓↓↓↓W
75 PRINT"↓↓↓↓↓↓↓↓↓↓πA
76 PRINT"↓↓↓↓↓↓↓↓pAπC◢*πCpD
77 PRINT"↓↓↓↓↓↓↓↓↓↓πA
78 PRINT"↓↓↓↓↓↓↓↓↓pX"
80 PRINT"QQp      * SUMMARY *"
81 PRINT"      QpD←◢MOVES RIGHT'
82 PRINT"      QpA←◢MOVES LEFT"
83 PRINT"      QpX←◢MOVES DOWN"
84 PRINT"      QpW←◢MOVES UP"
90 PRINT"Q      PRESS ANY KEY"
91 POKE198,0
92 GETA$:IFA$=""THEN92
93 POKE36879,27:PRINT"sQpNOW..."
94 PRINT"Q↓LOAD MUNCH MAZE PART◢#2"
0 QS=0:FL=8165
1 SC=7681:POKE36879,24:C=30720:AS=0:POKE
36878,15:POKE36869,255
2 DEFFNP(X)=SC+V*44+H*2:DEFFNV(X)=INT(10
*RND(1)+1)
3 P1=197:P2=37139:P3=37154:P4=37137:P5=3
7152:DIMD(3),M(100)
4 SK=0:KK=0:SP=32:Z=45:HC=39:VC=23:RX=31
:SS=41:XP=37:MA=8121
6 PRINT"s";BL$="↓----------      ------
7 FORQ=1TO20:PRINT p BL$:NEXT:FORI=8143T
O8162:POKEI+C,0:POKEI,45:NEXT
8 H=INT(9*RND(1)+1):V=FNV(0):P=FNP(0):M=
0
9 POKEP,37:T=0:X=-44:GOSUB14:X=-2:GOSUB1
4:X=44:GOSUB14:X-2:GOSUB14
10 IFT>0THEND=D(T*RND(1)):M(M)-P:M-M (T)
1):POKEP+D,37:P=P+2*D:GOTO9
11 M=M-1:IFM=-1THEN30
12 P=M(M):IFPEEK(P-44)<>ZANDPEEK(P-2)<>Z
ANDPEEK(P+44)<>ZANDPEEK(P+2)<>ZTHEN11
13 GOTO9
14 IFPEEK(P+X)=ZTHEND(T)=X/2:T=T+1
15 RETURN
30 FORB=7680TO8164STEP22:POKEB,45:POKEB+
C,0:NEXT
31 FORB=8165TO8185:POKEB+C,0:POKEB,45:NE
XT
32 FORB=8163TO7701STEP-22:POKEB+C,0:POKE
B,45:NEXT:POKE7700,45:POKE7700+C,0
33 FORZ=7724TO8185:IFPEEK(Z)=37THENPOKEZ
+C,6
34 NEXT
35 VP=7743:POKEVP,35:POKEVP+C,2:POKEMA,3
8:POKEMA+C,4:POKEFL,44:POKEFL+C,2
38 FORB=7702TO8185:IFPEEK(B)=37ANDRND(1)
<.1THENPOKEB,40+INT(RND(1)*3):POKEB+C,6
39 NEXT
40 D(0)=1-21*(RND(1)<.5):D(1)=1-21*(D(0)
=1):D(0)=D(0)+2*D(0)*(RND(1)>.5):D(2)=-D
(0)
41 D(3)=-D(1):T=3:TI$="000000
42 POKEVP,42:POKEVP+C,0
45 REM START MAIN ROU
46 F=F+1:IFF>1THENF=0
47 IFF=0THENFF=40
48 IFF=1THENFF=56
49 O=O+1:IFO>1THENO-0
50 T=T-1:IFT<=-1THENT=3
51 VD=D(T):PK=PEEK(VP+VD):IFNOT(PK=45)TH
EN53
52 T=T+1:T=-T*(T<4):GOTO51
53 POKEVP,XP:POKEVP+C,6:P=PK:VP=VP+VD:PO
KEVP,34+O:POKEVP+C,2:POKE7467,FF
54 XP=PK
56 IFVP=MATHEN500
57 IFAS>=198THEN200
60 KK=PEEK(197):IFKK=64THEN46
61 IFKK=9ANDPEEK(MA-22)<>45THENMA=MA-22:
POKEMA+22,32:GOTO66
62 IFKK=26ANDPEEK(MA+22)<>45THENMA=MA+22
:POKEMA-22,32:GOTO66
63 IFKK=17ANDPEEK(MA-1)<>45THENMA=MA-1:P
OKEMA+1,32:GOTO66
64 IFKK=18ANDPEEK(MA+1)<>45THENMA=MA+1:P
OKEMA-1,32:GOTO66
65 GOTO46
66 IFPEEK(MA)=32THEN69
67 AS=AS+1:IFPEEK(MA)<>37THENPOKE36877,1
30:QS=QS+10:FORQW=1TO5:NEXT:POKE36877,0:
GOTO69
68 QS=QS+1:POKE36876,240:POKE36876,0
69 PRINT"S↓pRSCORE_:◢'QS
70 IFVP=MATHEN500
71 POKEMA,38+O:POKEMA+C,0
72 GOTO46
200 POKEMA+C,2:POKEVP+C,6:POKEVP,43:FORQ
W=1TO100:NEXT
201 FORQW=1TO10
202 FORWQ=24TO31:POKE36879,WQ:POKE36876,
245:NEXT:POKE36876,0:NEXT:POKE36879,24
203 POKEMA,38:POKEVP,34:FORQW=7702TO8185
:IFPEEK(QW)=32THENPOKEQW,37:POKEQW+C,6
204 NEXT
205 FORB=7702TO8185:IFPEEK(B)=37ANDRND(1
)<.1THENPOKEB,40+INT(RND(1)*3):POKEB+C,6
206 NEXT
210 FL=FL+1:POKEFL,44:POKEFL+C,2:POKEMA+
C,0:POKEVP+C,2:AS=1:GOTO45
500 POKEMA,43:POKEMA+C,4
501 FOREX=15TO0STEP-.5:POKE36878,EX
510 FORXE=160TO150STEP-1:POKE36877,XE:PO
KE36876,XE:NEXT:POKE36876,0:POKE36877,0:
NEXTEX
511 FORUC=1TO600:NEXT:PRINT"s":POKE36869
,240:POKE36879,25:T=VAL(TI$)
512 PRINT"spQQQ↓↓↓↓*◢ GAME OVER p*"
513 PRINT"QQ←↓↓YOU SCORED◢:"QS
514 PRINT"QQ←↓↓TIME:◢"INT(T/60)"←MINUTES
515 PRINT"Q↓↓Q←FULL SHEETS◢:"(FL-8165):P
OKE198,0
516 INPUT"QQp↓↓ANOTHER ↓↓↓?◢◢◢p";A$
517 IF A$<>"Y"ANDA$<>"YES"ANDA$<>"N"ANDA
$<>"NO"THEN512
518 IFLEFT$(A$,1)="Y"THENPRINT"sQQK...":
FORQW=1TO1000:NEXT:RUN
519 PRINT"spQQOK..QQ◢◢◢◢←YOU ASKED FOR I
T◢.."
520 FORK=1TO100:NEXT:SYS64802
```

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The newest games for the VIC-20 promise danger and excitement. How did our reviewers rate them? Read on . . .

Space Assault
£5.95

Lyversoft, 66 Lime St, Liverpool

This game is in the Scramble genre, your task being to pilot a space ship down a cave scrolling right to left. Shooting alien craft and fuel dumps yield you points.

As the opposition does not fire back at you, the game is really an obstacle race. But you also have to bear in mind that your space craft has limited fuel, forcing you to dock with mother ships in order to keep up your supply

A nicely conceived game with nice graphics, but spoilt by two serious faults

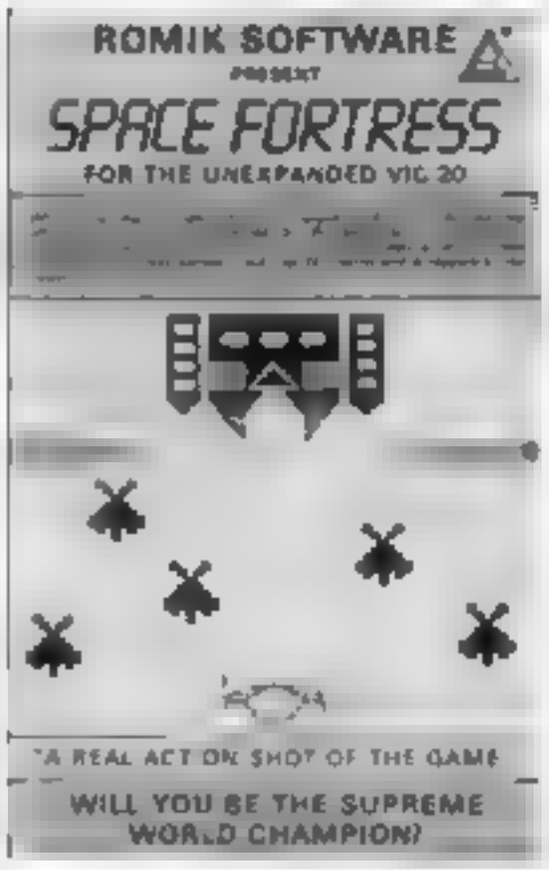
First, apart from the scrolling routine, the game is written in Basic, and all movement is slow and jerky as a result.

Secondly the program has a number of bugs which result in portions of the display vanishing and other odd things happening.

Sorry, Lyversoft, but against the large amount of machine code opposition this game doesn't stand much chance of success. **A.W.**

instructions	60%
playability	40%
graphics	75%
value for money	40%

★★



Space Fortress
£9.99

Romik, 24 Church Street, Slough, SL1 1PT

One of the better Space Invader style games. According to the storyline, you are lost in space following a breakdown in your craft and have to destroy the Space Fortress

This is defended by a strong armoury including a Suicide Squad, Sidewinders and Sistorian Swoopers. Finally you fight off the Purple Avangers before you can make an attack on the Fortress

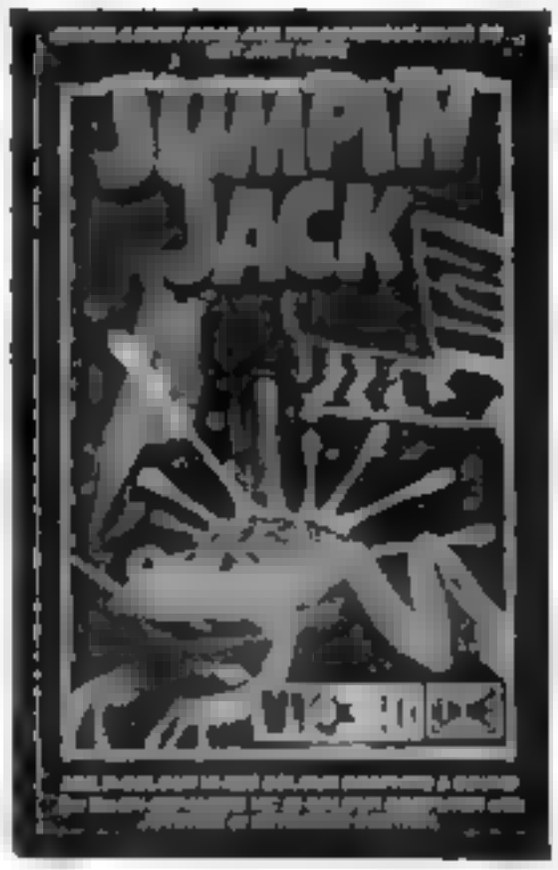
Destroying the Fortress gains an extra life (to add to the five granted at the beginning of the game). A maximum of nine lives can be accumulated, and with them a vary large score.

The instructions are clear, and well set out in the program For the keenest enthusiast there are up to twenty skill levels and even a competition to enter to find a world champion

Good use of sound and graphics. To make the best use of the fast action, use a joystick rather than the keyboard. **V.R.**

instructions	80%
playability	85%
graphics	70%
value for money	80%

★★★★



Jumpin Jack
£7.95

Sumlock, Royal London House, 198 Deansgate, Manchester M3 3NE

An unfamiliar name, but the picture on the inlay card should leave you in no doubt. This is another version of Frogger. Frog lovers among you may not like the picture, but frog lovers probably don't like the game.

The program, written entirely in machine code, has the usual features and the graphics are excellent. The little tune that plays continuously is very nice to start with, but I found it started to grate after a while.

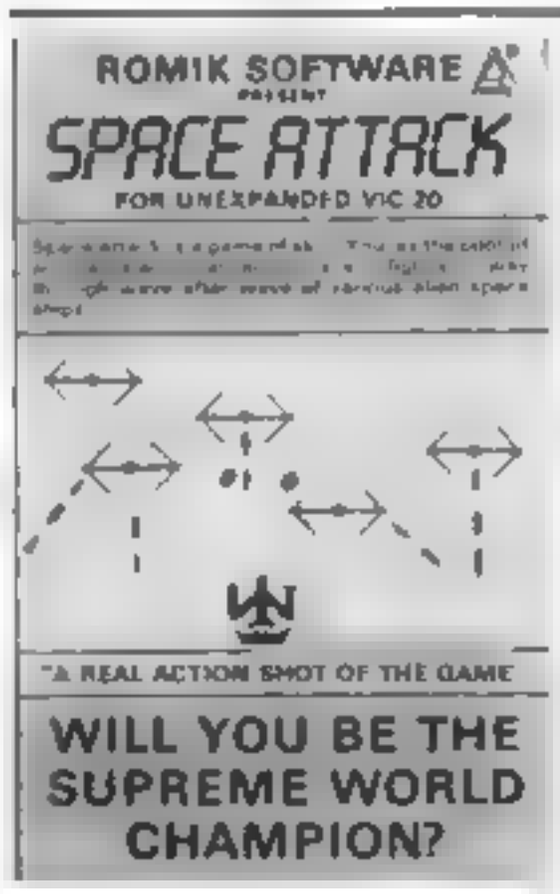
Control is from the keyboard or a joystick and both are easy to use. The keys (Z and C for left and right and / and , for back and forward) are placed within easy reach of each other and don't need to be hunted for.

Each stage is harder than the last, with the appearance of faster cars and the disappearance of some of the larger logs. The time limit also goes faster the further you get.

According to the inlay Jack is on his way home after spending the night with his lady friend, so if he gets run over, don't feel too sorry for him — I'm sure he'll die happy. If you've got a Vic and you're a fan of Frogger this just might be the game for you. **G.F.**

instructions	20%
playability	80%
graphics	90%
value for money	70%

★★★★



Space Attack
£9.95

Romik, 24 Church Street, Slough, SL1 1PT

Space is a hostile place, and the space craft in this game are out to get you. They attack at a fast and furious pace even during the early stages of the game.

But as you defeat one wave there are more to come, with deadlier weapons than their predecessors.

To defend yourself you have a laser and your own quick reactions to fight off the aggressors. The keyboard may be used (A = left, D = right, S = laser), or for better and faster results you have the option of joystick control

The graphics are superb but unfortunately there were no instructions at all with my copy.

Still, an enjoyable game and worth persevering with even without instructions. **V.R.**

instructions	0%
playability	75%
graphics	85%
value for money	60%

★★★

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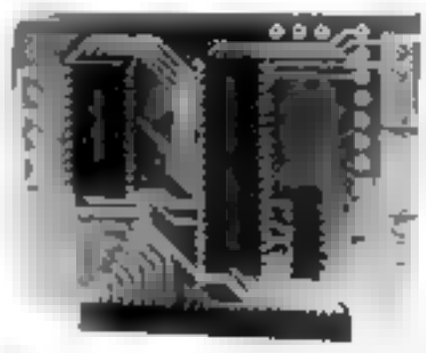

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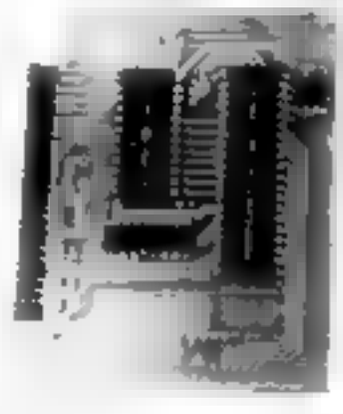

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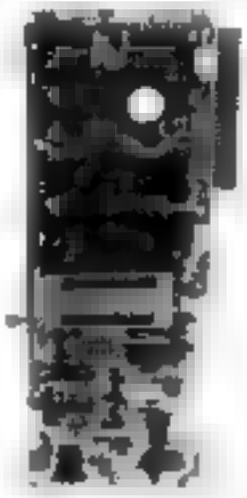

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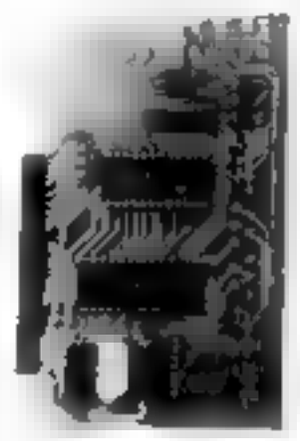

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Down to business with your Spectrum

Your Spectrum may be good for games, but that's not all it can do. David Nowotnik casts a critical eye over three programs whose intentions are serious

P.A.U.L. (Personal Accounting Utilities Ledger) 48K £12.95

Jaysoft, 6 Wentworth Drive, Bishop's Stortford, Herts

Double entry accounting has been the favourite bookkeeping method for several centuries. All financial transactions are recorded in ledgers (accounts) such that a debit in one ledger also appears as a credit in another.

For the newcomer to the technique, mistakes can easily be made. So Jaysoft have produced PAUL for Spectrum owners wanting a professional system to deal with personal or small business accounts.

Once you have found a way through the accounting jargon, the extensive instruction manual provides useful instruction and promises a lot for PAUL — setting up ledgers, ensuring that entries are balanced, providing trial balances, etc, etc. But in use, the program proved to be disappointing.

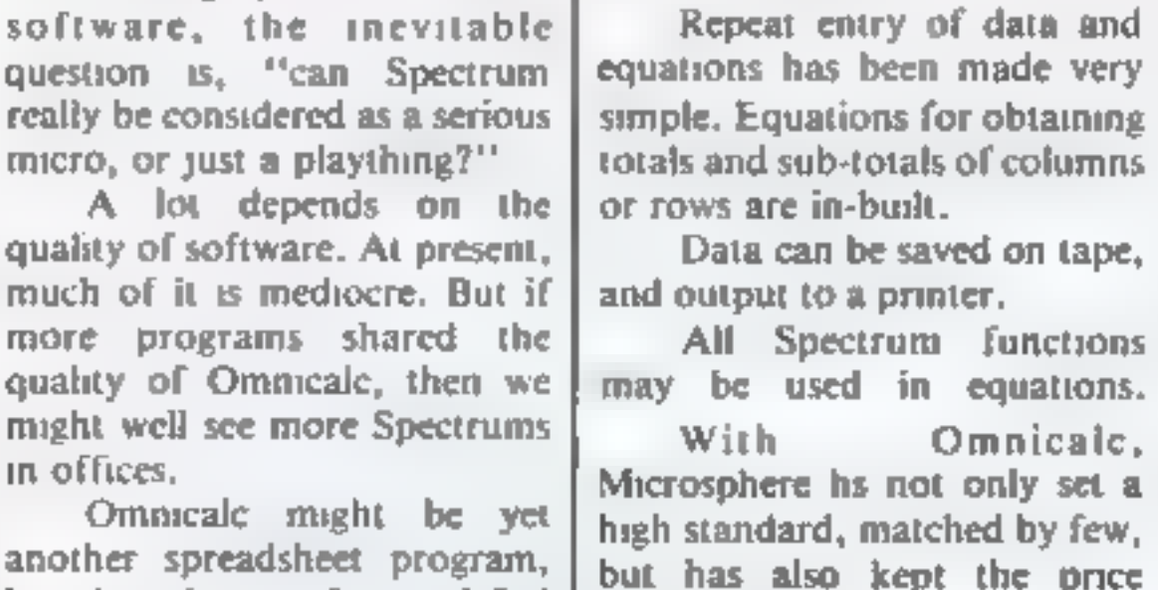
One test of a program is to press keys at random, to see if the program can cope with garbage. PAUL didn't — it crashed out with a system error message

Also on the negative side, screen formatting was poor, and the use of the screen display unimaginative. Data entry is cumbersome; instead of crediting one account and debiting another with a single entry, amounts have to be entered twice

Despite these problems, the program did what was claimed of it, and, once the user becomes familiar with all its limitations and quirks, it could provide Spectrum owners with a useful accounting package

The instruction manual starts — "Thank you for purchasing Jaysoft's PAUL" and the purchaser deserves at least that for parting with £12.95 for a product of such poor quality!

instructions	80%
ease of use	40%
graphics	50%
value for money	30%



Omnicalc 48K £9.95

Microsphere, 72 Roseberry Road, London N10 2LA

In reviewing Spectrum business software, the inevitable question is, "can Spectrum really be considered as a serious micro, or just a plaything?"

A lot depends on the quality of software. At present, much of it is mediocre. But if more programs shared the quality of Omnicalc, then we might well see more Spectrums in offices.

Omnicalc might be yet another spreadsheet program, but there is a professional feel about it which makes it stand apart from the rest I've seen.

To start, there is a well-produced 24 page manual.

The program has been well-designed. The entry of data/equations/text is straight forward, but if you get into problems, you can readily escape, and press h for help!

There are numerous error traps, and you are informed of an error by a low pitched beep. It is very difficult to go wrong

Repeat entry of data and equations has been made very simple. Equations for obtaining totals and sub-totals of columns or rows are in-built.

Data can be saved on tape, and output to a printer.

All Spectrum functions may be used in equations.

With Omnicalc, Microsphere hs not only set a high standard, matched by few, but has also kept the price reasonably low.

instructions	90%
ease of use	90%
graphics	90%
value for money	90%

Accounts 48K £25

Hestacrest, P.O. Box 19, Leighton Buzzard, Beds LU7 0DG

Hestacrest produce two 'Accounts' programs, one for a limited company, and one for a sole trader/partnership. Each costs £25, and the pair can be purchased for £35. The 'limited company' version is the one featured in this review.

Considering the price of the program, the instructions are poor. They form the major part of the cassette insert, and are very limited in the information they provide.

Hestacrest must assume that all users will have some accounting experience; the non-accountant might find the program hard to use.

From prime entries (individual transactions), the program will produce accounts summaries (profit and loss accounts, and a balance sheet with supporting schedules), and nominal ledger listings, trial balances, prime entry listings, all to screen or ZX printer. There are 73 named account codes in-built, many of which can be altered if not suitable.

The program works well, but there are a few annoying features. All transactions must be entered twice, to credit one account and debit another

There is no check to ensure that this is done correctly, and an imbalance in entry can give rise to tricky problems later on when the 'trial balance' or 'produce accounts' options are selected

Spectrum business software prices are much lower than their equivalents for the "serious" micros. But then, in general, quality is also lower.

In this regard Accounts is no exception. It offers a complete package, but lacks a little in quality.

instructions	30%
ease of use	60%
graphics	70%
value for money	50%

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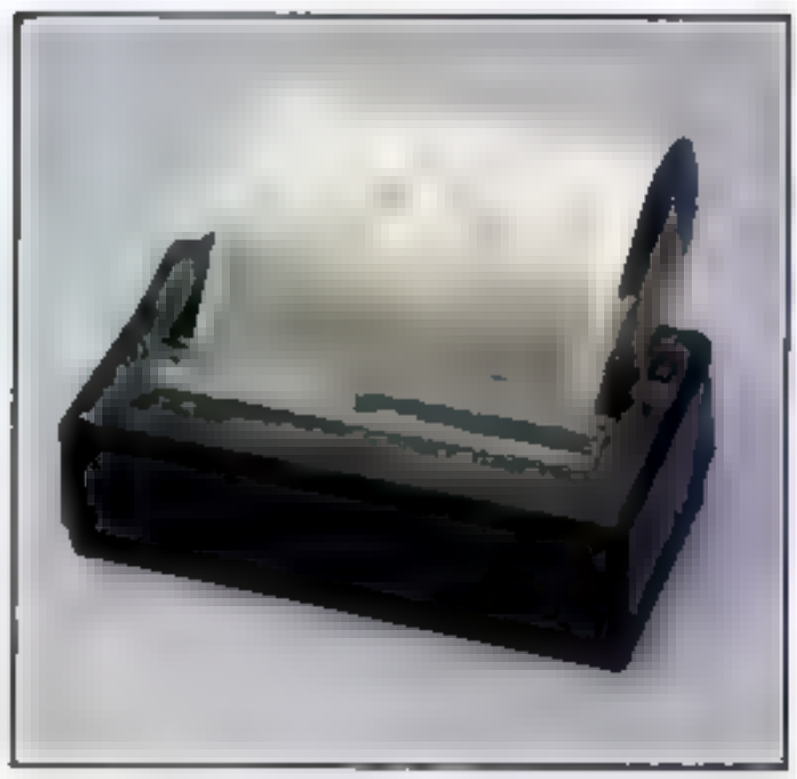

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Selling the longer lasting game

Chameleon has kept out of the mainstream of computer games with a range of adventures and war games that could go on for days. Geoff Goulding talked to Candice Goodwin about the company's strategy, and the problems it has encountered along the way

Geoffrey Goulding, of Chameleon, had the dazed expression that a few months in the computer games business tends to give people. "To be honest," he admitted, "I just can't keep track of who I'm talking to".

Not that Chameleon is a stranger to the software field. It has been selling business software for the Apple for a year now, as a spin-off from its associated communications company. But the games, which were started as a new venture in January, are another story — or, as Geoff Goulding puts it, "more of a saga".

They were looking around for new business ideas when the idea of selling computer games was suggested to them. At first, Geoff wasn't keen: "I immediately thought of the Atari and Intellivision games machines".

But then the idea of selling a rather different kind of program took root. "We decided to go for what you might call the longer lasting game. There are more than enough people supplying quick games — it would have been wrong of us to run with the hares."

Chameleon's approach was to set up their software business along the lines of a book publisher. They would deal with the marketing and make suggestions on how their "authors" programs could be improved

In this, Geoff feels, his lack of computing experience is a positive advantage. He said "Because I'm not so interested in the technical side, I've got no preconceptions about what can't be done. I can ask the sort of question that gets our programmers out of a rut".

They started out with 12 programs written by three different programmers, seven out of the 12 commissioned and completely rewritten by Chameleon. All of them were adventure games featuring striking graphics and strong storylines, often based on historical situations. But due to some cunning programming they all ran on the 16K Spectrum.

"We stuck to the 16K because Sinclair seemed then to be having some production problems with the 48Ks", says Goulding. "Besides, there are an awful lot of 16K Spectrums about".

Out of the original 12, Chameleon is now just advertising the three best-sellers: Seawolf, Battle of the Bulge and King Arthur, a game which Goulding thinks is "unique". It is an adventure in 18 parts, dealing with the life of Arthur in 6th century Britain.

"It's got graphics, maps, logistics — it's a real war game", Goulding says. "It's factually as authentic as possible"

During the game, the player has to fight nine battles, culminating in the Battle of Mount Baden, whose aim is to unite Britain under one crown. Meanwhile you have to keep your army happy during the long marches from one battlefield to another, and contend with all sorts of unexpected factors.

"You may suddenly find you can't move your army across the battlefield because the ground's too muddy, or because of the heaps of dead bodies. Or just before a battle you may find that two of your divisions have gone off pillaging".

Though King Arthur has been a success story for Chameleon, the company first acquired the rights to the game through a bit of knight-errantry that Geoff has since had cause to regret. It came from a small software company called CPS, which was one of the casualties of the competitive software market — it opened and closed again in the space of about three weeks.

Along with the rights to the CPS games, Chameleon agreed to try and sort out over 2,000 of CPS's overdue orders. But they found that CPS's records were in more of a muddle than they had bargained for: they found whole boxfuls of orders with no record of whether games had been sent out or not.

Most of the orders have now, Geoff says, been dealt with, "but the last few people are getting more and more irate We've been threatened with Esther Rantzen.

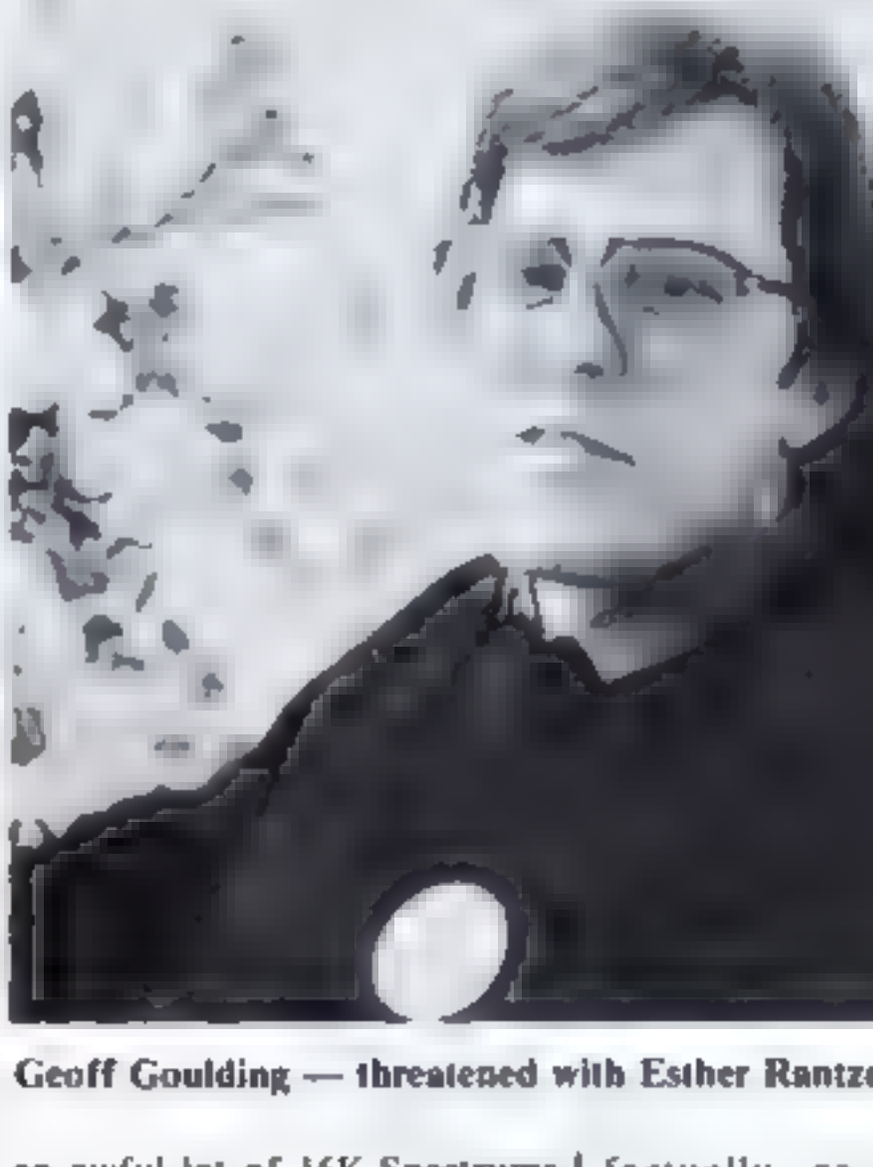
"People assume that Chameleon used to be CPS and has changed its name, which is a pity — our business has been set up on the basis of good customer relations."

Along with many other software companies, Chameleon has also been dogged by problems in getting their tapes duplicated. "Duplicating problems have put us back by two months — we're still waiting for tapes that were due in mid-March. It's lost us a lot of sales."

And delays haven't been the only problem, according to Geoff. The master tapes for their games have gone astray — "and the master is like our baby. If it goes astray...you don't know what that does to us!"

One customer rang in to say that the program he had ordered had turned out to be an audio cassete of fairy tales, and, Geoff claims, he has even found a completely new line in one tape sent out for duplication

"I don't know what the public makes of it when things like that happen. It's highly embarrassing — you're literally ▶



Geoff Goulding — threatened with Esther Rantzen

rigid in your chair when they ring in. I'm upset with the way that factors beyond our control have seriously affected the way we're trying to run the business"

Chameleon is hoping to get its duplicating problems licked soon, so that its "new generation" of games, due to be released in a couple of months, will be launched without a hitch.

The aim is to keep a range of 10 games for the 16K Spectrum, initially four wargames based on real situations, six adventure games, one based on a popular US TV series, and two children's games. Again the emphasis will be on good graphics, strong storylines, and useful features: the option to use the ZX printer to provide a permanent record of maps used in the games, and to stop and save games at any time. "After all, if you've got a 1,000-piece jigsaw, you don't put it back in the box every night, do you?" says Geoff.

There are also plans to produce a whole range of software aimed at small children, to be sold at "pocket money prices" — probably under £4. Geoff's wife Alexandra, currently at home looking after their 10-month-old baby, is working on some storylines for these, and negotiations are underway to use the characters from a well-known children's TV program as part of a game.

All the new programs will be priced around £6 — a fall in price from their current games, which sell at around £9. Geoff said: "everyone's bringing their prices down now".

Geoff, who originally went to art college, did the insert designs for Chameleon's first batch of programs, but the new range will have full colour, professionally-produced inserts. "If there's one thing we're trying *not* to do, it's produce shoddy products." So a graphic designer has now joined Chameleon's staff

It now also has "four and half" programmers, most of them in their late 30s. Geoff finds that "programmers and graphic designers are similar — they just don't work normal hours

"They don't want to be told it's going home time; so we have to be flexible, though it does upset planning sometimes. They all work at home, and we find that they all arrive in the office at the same time. It's funny — we've noticed that every time that happens, it's a full moon"

A couple of Geoff's insert designs for Chameleon programs

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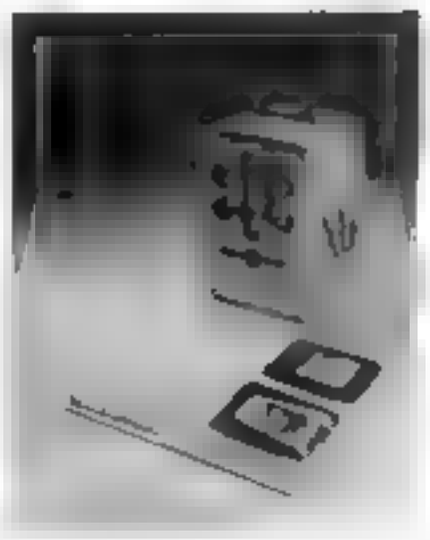

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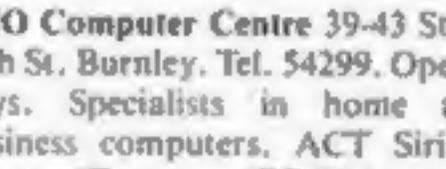

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We were renting a very small, very old house (since demolished) paying at that time 10/- weekly rent—this sum we had to literally 'scrape' together each week.

We did have (I say **did** have) an old 'banger' of a car, for which I had originally paid £140 on Hire Purchase.

One day along came the Hire Purchase Company Representative to repossess the car—as I then owed them two monthly rentals of £9 each (that was the amount of the monthly rental)—so that was the end of the car and the money paid on it—all lost.

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I had been 'working on' an idea that I had held **SECRET** for many, many years.

Remember—**I WAS BROKE**—in fact, somehow I managed to save the sum of TWO POUNDS (£2) assisted by my wife who had such great faith in me, however just this two pounds to commence—I have never looked back since and I have come a very, very long way, believe me.

I NOW HAVE THREE CARS.

I HAVE A LUXURY HOME and builders have recently completed an extension for me, quite costly of course, it is worth a SIX FIGURE SUM (£100,000) to me now, or if you prefer American Dollars, about $189,000.

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The book I sell is NOT a book of ideas, whereby you have to 'sort out' and secure your own eventual business ideas—it is NOTHING LIKE THAT—it details ONE BUSINESS ONLY at which I've succeeded and at which you will now succeed—it trains you for this ONE BUSINESS ONLY, there is NOTHING ELSE.

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YOU can decide how big you wish to become, it was my intention never to get too large, so I simply 'cut down' and worked only part time, enjoying life to the full and the rest of the time doing whatever I WISHED TO DO, no matter what it was—Fantastic—yes, BUT TRUE.

I make my offer at this time, to enable me to secure more time to write my second book, it will take me at least 12-18 months, but when it is published it will prove to be a sensation, believe me.

It is my intention to pass on the SECRET OF MAKING MONEY to YOU, I KNOW you are already very anxious to learn about it. Even if you are at present employed, you will commence part time, you will soon be presenting your notice to your present employer—TO WORK FOR YOURSELF—remember my own first three weeks—I EVEN BOUGHT A CAR.

Why 'line the pockets' of your employer any longer, start 'lining your own' before you leave it too late. I am not making this offer to MAKE YOU RICH, in order to make myself rich, it is not necessary, you already know why. Working part time, my last financial year shows income well in excess of £70,000 with profits at over £11,000—yes JUST PART TIME, this can be multiplied many times if necessary. For those who wish it, in American Dollars again, this amounts to about $132,300 and profits about $20,790.

I mentioned already that "More than half of the people in the World are Asleep", this is what allows the rest of us (Me and You) to MAKE THE REAL MONEY—because you are about to become one of the AWAKE people—if you WISH TO GROW RICH.

The pessimists say—"It is not possible to succeed on your own any more"—what utter rubbish and absolute nonsense—these people belong to the category that are ASLEEP—believe me, it is easier now than ever it was, but only those who WANT TO MAKE MONEY do so, I KNOW.

I was talking to a Rolls-Royce Owner recently, who said, 'the roads are paved with gold—people just will not help themselves'—it is TRUE you know, it is there for you to help yourself. Just taking, as a small example for you my most recent four years of part time working—on each of those years my income has increased each year over the preceding one—whilst others around me have closed down and gone into Bankruptcy.

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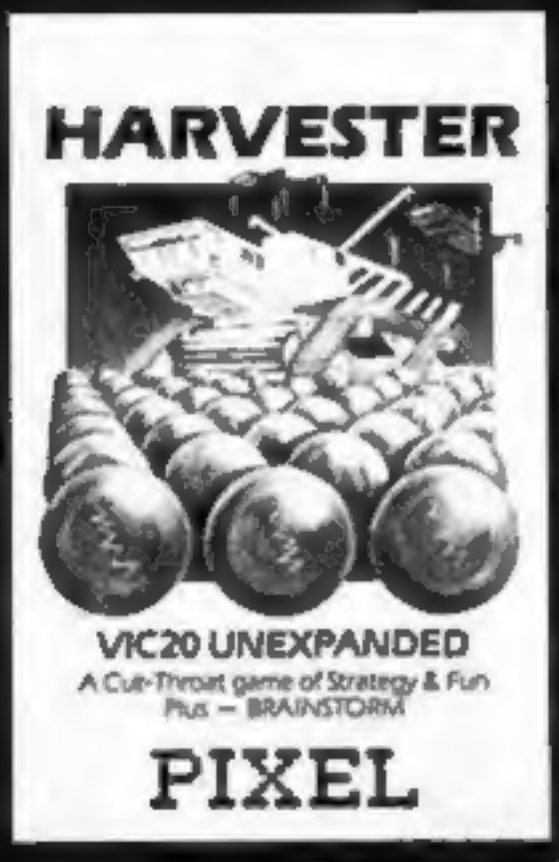

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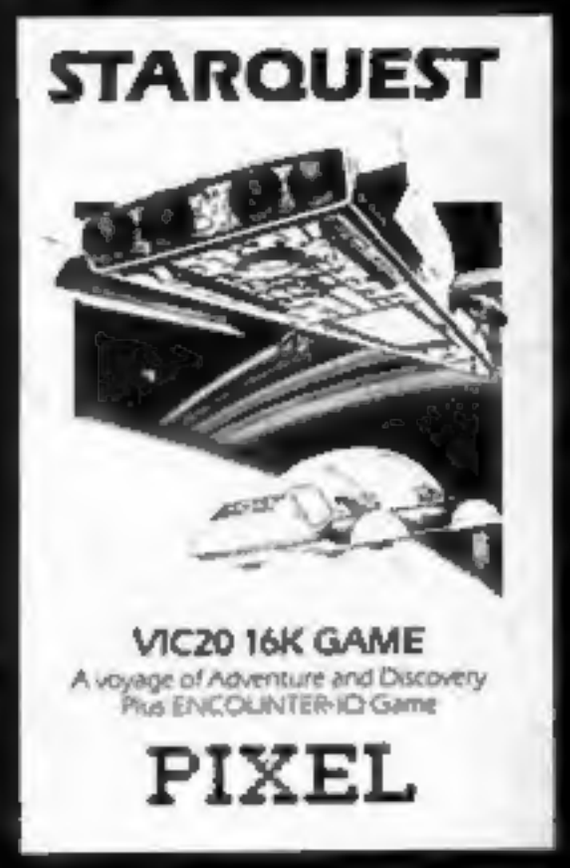

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